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PC REVIEW

THE COMPLETE GUIDE TO PC LEISURE

August 1996 • £4.99 • CD Version

Cut your own CD-ROMs We get you started today!

Store it!
We take the new Jaz drive for a test run

Movie mania
Everything you ever wanted to know about films on the Net and CD-ROM

3D Studio Max
The ultimate graphics app reviewed

Protect your PC
Virus killers head to head. Which is the best?

Get a faster PC
Step-by-step guide to upgrading your CPU the easy way

As seen on TV
Buyers guide: Video capture cards tested

Record Breakers!
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● **OLYMPIC GAMES**
Try two complete events

● **ORIGINS OF MANKIND**
Exclusive interactive demo

● **CUBASE SCORE 3.0**
Make music with this MIDI tryout

● **CITIZENS**
Be a god in this village-life game

● **SCALA SHOW AND TELL**
Design your own multimedia

● **VIRTUA FIGHTER REMIX**
Play Sega's killer beat-'em-up

● **SILENT THUNDER**
Fly a mission in an A10 Tank Killer

● **PERFECT PLANTS**
Look after your garden – a handy guide

Artificial life: Things that breed in the night

AUGUST 1996

Here come the...
DIGITAL PEOPLE

Artificial life report:
■ Discover how cyberlife will change computing forever
■ Meet Japan's virtual pop star
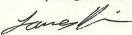■ Breed digital critters with your PC – six programs on CD

QUAKE IS FOREVER

'THE MOST IMPORTANT PC GAME EVER'

CONTENTS

Artificial life has always fascinated me. There's been something of a revolution in the science of replicating living organisms digitally and our investigation, starting on page 65 not only gives you the hard word from the cutting edge, but also shows how this new binary biology will change your day to day computing life. Essential reading!
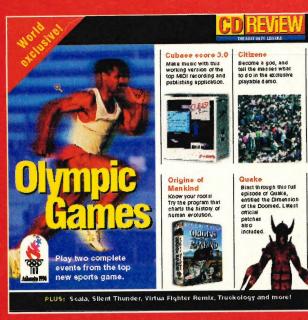
James Binns, Editor
jbinns@futurenet.co.uk

FREE QUAKE GUIDE

On CD Review, we bring you the shareware version of the game everyone's been waiting for. To accompany it is our unbeatable guide to playing through it. All the secrets are revealed, and you get early warning of most of the monsters too. If this doesn't crack the Dimension of the Doomed wide open then nothing will. The PC Review guide is available only with CD-ROM versions of the magazine.

Here Come The Digital People
Is she real or just a virtual creation? Well, her name is Kyoto Date and you can meet her in our investigation into the weird and very real world of artificial life. Find out about data worms on the Net and read an exclusive preview of Creatures, one of the most advanced pieces of Alife software yet. **65**

CD REVIEW
THE BEST IN PC LEISURE

World exclusive!

Olympic Games
Play two complete events from the top new sports game.

Cubase score 3.0
Make music with this working version of the top MIDI recording and publishing application.

Citizens
Become a god, and tell the masses what to do in the exclusive playable demo.

Origins of Mankind
Know your roots! Try the program that charts the history of human evolution.

Quake
Blast through this full episode of Quake, entitled the Dimension of the Doomed. Latest official patches also included.

PLUS: Scala, Silent Thunder, Virtua Fighter Remix, Truckology and more!

See page 97

Olympic Games world exclusive
The PC Review Summer of Sport continues with our stonking demo of *Olympic Games*. Two events are featured in their full glory, so load up and try weight lifting and skeet shooting.

Player
14 games to try, including THE BEST PC GAME EVER Quake – along with the latest patch upgrade. Also, look out for the God game *Citizens*, air combat sim *Silent Thunder*, and Sega's *Virtua Fighter*.

The Works
Seven nuggets on offer, including a working version of multimedia package *Scala*, an exclusive *Cubase Score 3.0* demo and the full version of *Digita Organiser 1.0*.

Multimedia
Six products featured, including exclusive previews of *Origins of Mankind* and *Perfect Plants*. Also look out for demos of *Truckology*, *SFX CD*, *Connections* and *Discover Astronomy*.

Shareware
The five best shareware programs this month, including a fully working word processor, a guitar tutor and a utility to print out massive posters.

The CD Review booklet contains a quick reference guide to the game controls. Turn to page 97 for a massive nine page guide to using the disc, including various projects, hints and tips.

EASY FIND

REGULARS

Store it! The Jaz Drive reviewed 87
Just think what you could do with a whole, extra gigabyte. Now think about what you could do if it was removable too. Iomega brings you the last word in removable storage.

3D Studio Max 83
It's the 3D graphics application favoured by the professionals, and now it's getting a PC debut. Prepare to be stunned by the ultimate modelling package.

Protect your PC 86
Your PC and the data on it is at risk if you don't think seriously about anti-virus software. We test the three best programs on the market for the home user.

Know your roots 73
It's a scary fact, but we're all evolved from stupid apes. Who were evolved from stupider apes. Who were evolved from rats. Or something. This CD explains it all!

Quake: The full release is coming 6
Just can't ignore it, can you? *Quake* is already being hailed as the best PC game ever. But so far we've just seen the shareware game. We ask: "What next?"

Behind the scenes: Sports double bill 24
We report on the making of two very different sports games: *Links LS*, the latest golf game from Access and *Davis Cup Complete Tennis*, being developed by Dome for Telstar.

The latest from LucasArts 40
Afterlife takes the god game genre and gives it a dose of LucasArts magic. We find out what went wrong in our indepth review.

Helpline: your questions answered 91
Is your PC refusing to co-operate? The *PC Review* team plough through a mailbag of our most common reader problems. We've got the answers you're looking for!

NEWS

CAN YOU FEEL IT?

Leaked Quake beta hits where it hurts!

Chances are by now you've played the shareware version of *Quake*. What you may not know, however, is that a beta version of the full game was leaked from one of the testers and turned up on the Internet last month. And though the leak has been plugged, impatient gamers are still poking around the Net trying to get their hands on it.

The result? By rushing into the unfinished game, they've probably spoiled the excitement for themselves.

We contacted Id Software to see how finished the leaked beta was, and business manager Jay Wilbur explained that, while the level maps themselves were only being changed slightly, there were massive updates planned on the lighting. Additionally the team was adding Gravis Sound support. Wilbur scoffed at the latest patch (version 0.92m included on *CD Review*) which implements joystick control, claiming that the only reason

Id had done it was so that, "people can go in and see for themselves that joystick sucks for this kind of game."

Another major change expected in the final version is redbook audio – CD quality music which streams from disc while playing. Id is still involved in wranglings with Nine Inch Nails to secure exclusive tracks for the game. As for the storyline, the back of an envelope plot in the shareware version is likely to be abandoned. The chance of a character called *Quake* appearing is dwindling, though Wilbur maintains that anything could still happen.

On the frontend, expect a revamp of the menus. The text-based console will stay, but there will be a much more intuitive method for running network and modem games plus an easier way of choosing the clothing colour for your character.

So, when's the finished game coming out? When it's finished. Stay tuned for further Id developments.

Angry. Id Software is not pleased about the leaking of a full beta version of Quake onto the Internet, but promised that the finished product will be far superior to it.

Id Software is still involved in wranglings with Nine Inch Nails to secure exclusive tracks for the game.

GO GOO GOO

Get the face you want with Kai's new baby

Putting the fun into function, Kai's new *Power GOO* is a graphics mutilation and manipulation tool. You can grab a face, then stretch, smear and warp it right before your eyes. "I love seeing the smiles *GOO* gets from people who never thought of themselves as being creative," said John Wilczak, company founder. "This product is Funware!"

With a sophisticated fusion palette and *GOO*vie animation, *GOO* marries the special effects of high-end imaging systems with the coffee-break realm of personalised t-shirts and screensavers. Either import your own mug, or else pick a victim from a gallery of famous faces, then get Gooing!

We'll be getting sticky with Metatools' Kai Krause in next month's *PC Review* interview, when we'll also bring you an in-depth *GOO* review.

If you can do this to the Mona Lisa, imagine what you can do to your boss.

Master Blasters

Creative Labs lays its cards open

You've heard the story. Boy doesn't meet girl, boy leaves real world for the Internet, boy meets girl, girl lives in Dundee, boy runs up an enormous phone bill calling his beloved from Exeter.

Creative Labs, the company that brought you the SoundBlaster, is now offering our boy the Internet-Blaster as an affordable way of getting on-line. For £149, it comes with fax facilities, free CompuServe access and WebPhone from NetSpeak, enabling the lonesome boy to phone long distance for the price of a local call.

What? Boy needs even more power? For £199 his PC can make a date with ModemBlaster Voice, which bundles in communications software to create a virtual secretary on his Windows desktop.

The march of the Blasters continues on the visual front with the Graphics Blaster family. These cards feature 64-bit accelerator technology from Cirrus Logic with the retail model, the MA302, making use of new RAMBUS technology. Clocking in at 500Mb/s bandwidth, it will cost a competitive £129. Finally, if you're a Creative Labs fan who's looking for a 3D accelerator you might consider waiting for its forthcoming 3D Blaster card. This PCI model, which supersedes the previous VLB card, has the support of a number of developers, with *Euro 96* one of the first games to benefit.

Dark Earth brings cataclysm

New 3D adventure from Mindscape

Dark Earth's real-time texture mapping, gouraud shading and SVGA conjure up a scene familiar to anyone who's ever experienced an apocalyptic comet collision.

More than 3,500 frames were needed to animate the 80 creatures inhabiting the Dark Earth universe. Here's just one of them.

Dark Earth is the first in a new series of games from Mindscape set in a medieval future world. Three centuries ago a gigantic comet passed by the earth and, in the best tradition of galactic cataclysms, destroyed life on Earth as we know it.

With most of the planet's surface made inhospitable by impenetrable black clouds, the last vestiges of mankind cling on in the Stallites, pools of light piercing the perpetual gloom.

Rendered with SoftImage and 3D Studio, Dark Earth features a mix of cinematic sequences and 3D landscapes, plus a full MIDI soundtrack and over two hours of spoken dialogue. The game is not slated for release until early next year.

Advert adversary

Chapel Hill, North Carolina seems an unlikely birthplace for an on-line revolution. But if 23-year-old James Howard has his way, Net prospectors everywhere will come to rue his student town. His new software, Internet Fast Forward, subverts Internet ads by stripping them from Web pages as fast as they're downloaded. It could prove catastrophic for anyone hoping to make money online. Last year alone, Internet advertising was a business worth more than $60 million.

Howard, a drama student, is chief executive of PrivNet, the company he co-founded to market the product. "Advertisers have every right to put all the ads on the Web they want," he says.

"Users have every right to try and block them." Fashionable banner-style adverts are not only obtrusive, says Howard, but they cost a significant amount to download. "Right now, it's costing me money to look at their ads."

IFF plugs into Netscape's Navigator and also enables users

PrivNet's on-line logo from the site advertising the software that may end Web advertising. Ironic indeed.

to block blinking text and graphics. It cleanses the Net Search button of advertising and it even reformats text around the expurgated propaganda. If it catches on, IFF could force content providers to find other sources of funding. At one extreme, currently free sites could elect to charge a connection fee.

James Howard hopes to make serious money from his ad-blaster. He's no white knight, and claims to have invested hundreds of thousands of dollars in his fledgling company. What if the program bombs? Well, there'll always be theatre.

Internet Fast Forward can be downloaded from http://www.privnet.com.

The Pen is Mightier

The world's best (and only) cordless, battery-free, pressure-sensitive pen peripheral just got better. Or so claims its maker, anyway.

The new UltraPen Eraser from WACOM features a pressure-sensitive drawing tip and eraser plus two new programmable side switches which mimic Windows mouse functionality. The UltraPen offers 256 pressure settings and provides the user with two different drawing feels. For accurate creative work and writing there's the hard feel, while the eraser tip has that soft, flexible feeling for painting and drawing work.
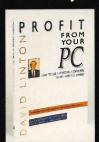
It is compatible with well known graphics packages like Adobe Photoshop, and Fractal Designs' Dabbler and Painter. Furthermore, it is designed to be context-aware, so it doesn't try to remove chunks of the screen when you're running a word processor, but deletes your words instead. It's available in the UK from Computers Unlimited.

Weighing in at 14cm, 10g, the UltraPen Eraser will never run out of ink. It's yours for £59.

● Have you heard of Z? That's the cryptic name of the next big game from The Bitmap Brothers, designers of Speedball and Chaos Engine. It was supposed to come out for Xmas 1995, but has seen some epic delays. PC Review can finally confirm that Z – a kind of Command & Conquer with ABC Warriors and big explosions – should be out by the time you read this. The reason for the delays? While the game worked well in multi-player testing with two or four players, the artificial intelligence was incapable of playing a three player game. Review and demo next month.

● You'll be able to skip from swordplay to soap opera in Masters of Dimension, a new reality hopping adventure from US Gold. Armed with a gadget that breaks down space-time barriers, you scour the dimensions in search of Merlin the Wizard's fragmented staff, flitting from space station to detective film noir via more than 100 locations. Alternatively, if 12 realities are too much, step back to just the one. Wage a sea war of yore in Wooden Ships & Iron Men, also from US Gold. As captain of a Man-o'-War, you grapple with the Americans, British, French and Spanish, hitting first with long range cannons and then moving in for the kill with a grisly boarding action.

● Next up, two upgrades for Microsoft Flight Simulator. FSFX brings you the Austrian Alps, with a visibility of just five miles, the urban sprawl of Paris and New York and a souped-up Japan, with the breathtaking Mount Fuji climbing 14,000 feet and out your monitor. In all, the developer Papa Tango has added more than 300 new effects, and claims its new Textureal technology has proven so impressive that it's up for patent. FSFX is expected to cost around £39.95. Meanwhile Perfect Flight from Instant Access concentrates on improving the scenery in the British Isles, as well as giving you 18 new planes to crash. There are new islands too, including the Channel Islands, Gibraltar, the Canaries and the Azores, all at £19.99.

● If you're itching for flipping and tilting, there are four new tables in Absolute Pinball from 21st Century. Each has a theme – Hollywood, baseball, aquatic adventures and the desert. Created in conjunction with Swedish developers UDS, it is due out in August at £29.99. More original is the Pinball Construction Kit, being designed by SpiderSoft. Working from 64 tables, you can add your own bumpers, kickers, lights etc using an intuitive point and click interface. It should sell at £44.99. More soon.

RECOMMENDED READING

Profit from your PC

Up for making a fortune by using your PC to help you play the stock market? Then you'd best have a read of *Profit from your PC* by David Linton. With a fairly accessible breakdown of the financial market and plenty of charts showing you how to catch trends, the book hopes to tell you how to accurately judge the right time to buy or sell.

With *Profit from your PC* comes a coupon for a free copy of *Updata Profit for Windows* – a stock market simulator detailed in the book. The book also features a full Internet financial directory so you can log onto your favourite financial sites.

The PC Bible 2nd Edition

This is the latest edition of a book which has become extremely popular among PC tinkerers the world over. It incorporates practical advice on just about every area of computing, ranging from how to buy a PC, to networks, communications and even personal finance software.

Each chapter starts with an easy to follow introduction, before going on to discuss in more detail the various facets affecting the issue at hand. Along the way, there are little tips and highlighted points of especially great importance. This book is an all-in-one library and is comprehensive enough for users of all levels of experience.

The Indispensable PC Hardware Book

For your spit and sawdust users who really like to get their hands dirty, here's The Indispensable PC Hardware Book. It's just the thing for anyone who wants to know all there is to know about hardware systems and how to upgrade them. Although, by its nature, the book does become rather deeply technical at times, it's a very useful reference source when you want to check specific details concerning how various pieces of hardware from processors through motherboards and on to SCSI interfaces and terminators work.

It's very much aimed at the more experienced, perhaps even, the professional reader, for whom it provides a wealth of real nitty-gritty information such as network topology, PCMCIA functions and codes, hard drive parameters, and so on.

The Underground Guide to Troubleshooting PC Hardware

In the light of our hardware upgrade feature on microprocessors, we thought that we'd mention this book because it's an ideal companion to the job at hand (ie upgrading your processor.

As it's name suggests, the book has been written to help you solve hardware problems, but it's more than that. It's about acquiring a deeper understanding of your computer and peripherals in general. Although it covers similar issues to the *Indispensable PC Hardware Book*, the *Underground Guide* is altogether more accessible and light-hearted, but that readability comes at the expense of expert level information. It's a far less weighty tome, and doesn't go into so much depth. Good for novices and intermediates.

SUMMER SALES

Internet retailers are out for your money

The cash registers of cyberspace are ringing loudly this month.

ShoppersUniverse, a new virtual shopping mall, was launched in the UK while in the US, Microsoft has acquired eShop Inc, a leading developer of Internet commerce technology. These latest developments betray the interest that direct to home retailers (the companies responsible for infamous mail bomb literature) have in tapping into the lucrative 20- to 45-year-old on-line male market.

At *ShoppersUniverse*, you pick up your virtual shopping bag then wander through outlets such as Burberrys, Interflora and PC Sports. You can find the perfect tennis racket, buy it with your credit card and have it delivered to your door in just five days. "Electronic shopping is as rich as it is in reality, but without the hassle of traffic jams, parking costs, crowds or heavy shopping bags," said Lesley Mingay of Shoppers-Universe, promising that 3D-modelling, zoom control to inspect the goods and personal electronic shopping avatars for customers will feature in the Net shops of the future.

Microsoft's purchase of eShop is another vote of confidence in electronic commerce. It will integrate eShop's commercial services tools into its Microsoft Merchant technology to create a next generation Internet shopping construction kit for developers. *Shoppers-Universe* is the first European site to benefit from Microsoft's new solutions.

ShoppersUniverse – surely there are no bar codes in cyberspace?

Rubbish

Explore a stinking junk yard

Down in the Dumps, the eagerly awaited cartoon adventure from Haiku Studio, is close to completion. The game has already won a London Effects and Animation Award, and is full of adult humour violence. Haiku, which produced *Megarace*, has been working on *DITD* for over two years, blending cinematic sequences and interactive graphics with engaging, surreal gameplay.

You play the members of the miniature space-faring Blub family, who've crashed to Earth after a road rage incident at the intergalactic cross-roads. Landing in a tip, the Blubs build a camp among the Coke cans and old boots and start fixing their vehicle. Portions of the downed spaceship have been scattered hither and thither, and it's your job to find them. A trigger-happy rat, a susceptibility to alcohol, a cosmic gang of teenage tearaways and anything over six inches tall are all that stand in your way.
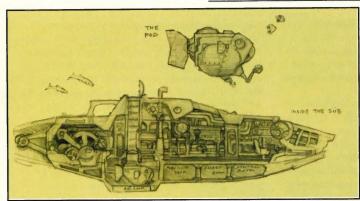
Down in the Dumps, published by Philips Media on CD, is due out in October.

The Blub family can be yours for £44.99 this October.

See the light
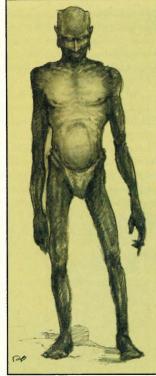
Sierra presents an alternative reality

The submarine you pilot in Lighthouse is fully interactive. Contrary to the sketch, we advise you keep the hatch down while underwater.

It's a grinch-like, tattooed, power hungry creature like the coyote in native American mythology, or Briar Rabbit," says Oliver Brelsford of the Dark Being, a key character in *Lighthouse*, the game he's designing for Sierra. "The Dark Being represents many of the bad characteristics of human kind."

Conceived of as a modern folk tale, *Lighthouse* sees you baby-sitting your friend Doctor Krick's daughter. The Dark Being materialises out of nowhere, grabs the kid and vanishes. A mad chase to retrieve the child ensues taking you – via foot,

ornithopter and a submarine – through an other-worldly dimension.

The plot and characters were dreamed up by Brelsford and his girl-friend while they drove from LA to Fresno. The point and click gameplay will involve puzzles, along with barren landscapes. The graphics are pre-rendered, with character animation achieved using *Alias Power Animator* on Silicon Graphics workstations. We've been lucky enough to see a pre-release version at *PC Review* and can confirm that the visuals, while not in real-time, are still worth looking out for. Expect Lighthouse late Summer.

A wily, evil looking fellow, he's called the Dark Being in his home dimension. At one point Sierra had 12 artists devoted to creating a visual feel of Lighthouse.

From BC to PC

return to paradise with Peter Gabriel

Once he wanted to be our sledgehammer but now he's happy playing the role of techno-prophet. Here's Peter Gabriel on multimedia: "I see it as a new language emerging in the future because all round the world music and graphics are being pumped down phone lines and the Internet, doing away with the barriers associated with text."

Gabriel is to follow-up last year's *Explora* CD-ROM with *Eve*, a disc being designed by Real World Multimedia. It's art, it's music and it's a CD-ROM. "I can be an artist who can function in any media I choose to," says Gabriel.

Eve is set in a paradise turned to mud. You dub music and mix an interactive video in your efforts to help Peter in his quest for *Eve*. Featuring the work of four different artists, the CD will also enable you to visit galleries, meeting philosophers, scientists and couples in and out of love.

"Nietzche said 'A good book should be like an axe to a frozen lake'," notes Gabriel. "When an artist touches something real they have created a tool. Multimedia is a wonderful place for investigating art as a tool kit and that's the direction I want to see CD-ROMs go – encouraging people to take the roles of artists themselves." Amateur pop-deconstructionists can get Eve from their local software emporium from 11th September.

Typical. Just when you've found a quite stretch of beach, four more blokes with pink suitcases turn up.

So many apples, so much human suffering. Can we skip knowledge and go for a Granny Smiths instead?

MULTIMEDIA IN BRIEF

● Is your love life flagging? Revive it by spending more time in front of your computer. *The Lover's Guide*, published by YITM, is yet another sex guide CD-ROM. This one claims to offer interactive sex by adapting to the personal preferences of its users. It includes photos, illustrations and 35 minutes of video sequences, and you can also listen to pre-recorded true life experiences. It is due for release in October.

● For something completely different, why not explore the history of Native Americans with *Thomas Blue Eagle*, also published by YITM. Based on a true story, the CD features unique visuals, with episodes from Thomas' life animated in his own ledgerbook. He's backed up with words from his father, Chief Iron Arm. You can even create your own stories, then animate them to produce a charming dancing picture. *Thomas Blue Eagle* was produced by two American lawyers and has already won an EMMA for best visuals. Look out for a review in a forthcoming *PC Review*.

● Blender, the CD-ROM music and entertainment magazine, is going on-line. Starting with the July issue, users will be able to access *BlenderWeb* at the click of a mouse, and then jump seamlessly back to the CD-ROM. Check it out at http://www.blender.com.

● If you're more interested in PCs than Political Correctness, you might well find a home for the *Sun*'s new screensaver on your desktop. "Not available on a floppy disk, contains no viruses, keeps you abreast of the rest," says the inspired press release. You can customise your monthly calendar by choosing 12 women from more than 50 on the CD, and in a direct challenge to the likes of Microsoft, it even includes a year planner and an appointment book.

Sex guides and screensavers – all in a month's CD-ROM debauchery.

STONED

Ancient monument gets modern Web site

English Heritage, in partnership with Intel, has produced a VR version of Stonehenge. You can access the model over the Internet, and explore the prehistoric site before agriculture, tourism and pitched battles between crusties and cops changed the Summer Solstice scene forever.

Ten different perspectives of Stonehenge, from 8500BC to 2000AD, are at your mouse-tips. A sundial icon sends you flying through time, and you can approach the prehistoric stones from any direction. You can even witness a virtual Solstice. Professor Robert J. Stone, Director and Manager of VR Solutions, which produced the model, claimed the site demonstrated the ever-increasing power of the chips inside our PCs. "Twelve months ago I wouldn't have believed it possible to render such a visually detailed virtual reality model of Stonehenge – plus the local terrain, the night time sky and real-time sunrise special effects – on anything other than a very expensive graphics supercomputer. Yet this is what we have achieved, on a Pentium Pro based Intergraph system," said Prof Stone.

Is it as remarkable as prehistoric man hulking dozens of gigantic stone monoliths across the British Isles, maybe centuries before some bright spark even considered cutting the pointy bits off his prototype wheel? Judge for yourself at **http:\\www.intel.com**.

To browse the virtual Stonehenge, you'll first need to download a free copy of Superscape's 3D Viscape plug-in from the Intel Web site.

So-called new age worshippers no longer need to trek across the country and fight through a police barricade to get to the stones. Now that's progress for you.

THE CHART

Top Ten Selling PC CD-ROMs
(Position last month in brackets)

1	(-)	Settlers 2:	Blue Byte
2	(1)	Duke Nukem 3D	US Gold
3	(8)	Euro 96	Gremlin
4	(2)	Civ 2	Microprose
5	(-)	Championship Manager 2	Domark
6	(3)	Command and Conquer	Virgin
7	(6)	Encarta96	Microsoft
8	(5)	Worms	Ocean
9	(9)	FIFA Soccer 96	E.A
10	(-)	AH-64D Longbow	E.A

New Musical Express on Internet

Hot on the heels of our music special last month comes *nme.com*, a Web version of the popular music weekly. Featuring editorial content from its print sister, the New Musical Express, *nme.com* offers news, reviews, interviews, features, chat and a gig guide.

There will be demos by new bands and a Camden Market page, likely to push as much dodgy music-related knick-knacks as its real world namesake.

Brendon Fitzgerald, the editor of *nme.com*, proclaimed: "With UK music in ascendancy all over the planet, now is the perfect time to unleash NME in a fresh and fun form to its global readers." Only a small selection of each week's material will go on-line, but it will be complemented by audio material unavailable to the paper's traditional readers.

Ash's 'Oh Yeah' was proclaimed single of the week in the launch issue of nme.com.

Elsewhere on the Net, Yamaha has signed an exclusive deal with Netscape, which could change on-line music for good. The deal makes Yamaha's *Soft Synth* the standard sound generator for the Web. In what Yamaha's Jim Corbett termed 'one of the biggest launches in software history', users will be able to access music on the Net without either a sound card or downloading high memory wave data. Instead, *Soft Synth* utilises your processor to decode MIDI data.

This is far more compact than standard audio wave data and so enables entire musical compositions to be embedded in a home page. To hear *Soft Synth* in you'll first have to download the software component, which is now available free at **http://www. yamaha.co.jp/english/xg**.

COMPLETE CONTROL

Have you waggled your stick beyond exhaustion? Contemporary Games has just let loose two tempting new models – a joystick and a joypad. The Acemaster 18 is for the Top Guns amongst us, a joystick bristling with hat switches, turbo selectors and X and Y trimming. Alternatively, if you're thinking of switching to joypads, the Megapad XII is a lively contender, with six fire buttons, an eight directional thumbpad and a turbo speed selector.

The Megapad XII offers eight way twiddling for £17.99.

The Acemaster 18 is touching down near you at £39.99.

Mind-reading PCs are on the way

The world's first commercial mind-reading computer system is now being evaluated by the US Air Force. The Cyberlink Human Computer Interface, a sensory-loaded headband that plugs into a PC, has applications ranging from missile and wheelchair co-ordination to telepathic Tetris.

Scientists have long dreamt of machines directed by the power of thought. Recent advances in electroencephalography – which you'll recognise as the medical technique commonly used to locate brain tumours – have enabled the construction of the bio-amplifier at the heart of Cyberlink. Dr Andrew Junker, who designed the system, explains: "[Cyberlink] looks for electrical activity in particular frequency bands, called alpha, beta and theta." By consciously shifting between these states, trained users are able to control simple computer programs.

The US Air Force, in conjunction with Stanford University, is currently testing the system and in demonstrations so far, a 36-year-old woman with cerebral palsy has learned to move a cursor around the screen. Meanwhile, as well as psychic *Tetris*, Dr Junker has developed an extrasensory shoot-'em-up and a version of billiards. Surely it's just a matter of time before we face clairvoyant *Quake*? Then they'll feel your fear.

INDECENT LAW DISSED

An American federal court has declared a new Net censorship law to be unconstitutional. The law, intended to protect children from pornography distributed via the Internet, would have let the American government prosecute any service provider who made explicit pictures and text available to minors. Penalties including a $250,000 fine and two years imprisonment could have met those found guilty under the controversial law.

The ruling, by the US district court in Philadelphia, is good news for fast expanding communication companies such as America Online and Compu-Serve. "It means a gigantic world-wide sigh of relief," said Charles Marson, attorney for Netscape Communications. The court decided that the Internet was analogous to a, "never-ending world-wide conversation." As such the government had no right to interrupt it.

NEWS CONTACTS

Autologic Data Systems	.01590 683868
Cirrus Logic	.01727 872424
Computers Unlimited	.0181200 8282
Contemporary Games	.01454855 050
Creative Labs	.01734 344222
GUS Electronic Retailing	.01905 618911
Horizons Technology	.0031235685558
Instant Access	.0181205 2596
Intel Corporation	.01793 403000
Internet Network Services	.0181 296 9201
NME	.nme.com
PC World	.0990464 464
Philips Media	.01719113030
Real World	.01225 743188
Reveal Computer Products	.0181 8457400
Sierra	.01734 303322
Sony	.www.sel.sony.com
Yamaha	.01908 366700
YITM	.0113 243 8283

THE WORKS IN BRIEF

● Autologic Data Systems is offering a range of home car care guides for motorists at the bargain price of £4.99. *AutoDisc Pro* covers ten popular cars, and includes instructions, diagrams, and a data guide to help you service your car in you own home (or at least out in the driveway or garage).

● WACOM has just bundled its ArtPad II graphics tablets with Fractal Designs' *Dabbler* drawing software. The package will be distributed through PC World, and is priced at £135.

● The world's first multimedia keyboard has just been released by Reveal Computer Products. Uniquely, it includes built-in speakers and a microphone. Applications range from voice recognition to video conferencing, with the keyboard especially useful when desk space is at a premium.

● Anyone developing a multimedia application might consider using Power! Video Pro from Horizons Technology to meet their video compression needs. It is an intraframe codec that is said to compress four times faster than Cinepack and ten times faster than MPEG 1. Most significantly, playback is absolutely free, with no playback licence required. See demo clips at www.horizons.com.

●"This device goes beyond simple scanning to give a full electronic office on the desktop," said Patrick Ramseyer, managing director of Sicos in Northern Europe of his company's Document Management System 2000. Boasting a top resolution of 800dpi and recognising 256 shades of grey, the compact scanner can handle documents from paper scraps up to full size A4 and costs £130.

● Prolink Microsystems claims its new PixelView Combo TV Plus, a video playback/desktop TV card, offers the best graphics performance in the industry. It also includes features such as a 122-channel cable-ready TV tuner, video-in-a-window and an optional remote control. The card is based on Cirrus Logic's VisualMedia Accelerator and TV Decoder, playing CD-ROM video clips at 30 frames a second.

BURN
TIME

Over a few short years, CD-ROM has grown from being just another new storage medium into a force which has literally redefined the face of PC computing. In a market awash with delivery and storage media including floppy disks, tapes, DAT, minidisks, optical disks and removable hard drives, CD-ROM has still managed to jostle its way to the front of the crowd and become the delivery medium of choice. But why?

There are many reasons for the popularity of CD-ROM – most of them economic. Compact discs offer benefits to everyone involved in the data equation. For manufacturers, it's cheaper to supply software on a CD than it is to use a few high density floppies. It's also easier, and there are fewer problems with faulty media. For the end-user, CDs are robust, easy to handle, and minimise the effort required to install software.

We, the users, draw the greatest benefit from CD because it's the only practical means of supplying data intensive applications such as encyclopedias, multi-media presentations with lots of video in them and large graphic adventure games. In fact, many products on the market just couldn't exist in their current form without the huge capacity of the CD-ROM as a storage medium. And don't forget the fact that you can also use CDs to supply audio data. Of course, the music business was where the whole idea originated, but the computer industry has adopted the medium and exploited it far beyond the limited capabilities of the record companies.

Pure and simple logic

The obvious logical progression from the ordinary mass produced CD-ROM is the recordable disc. This is something that everybody can enjoy, providing each of us with entirely new vistas of

What you'll need
Here's a breakdown of all the gear you'll need to get your private CD-ROM industry up and running.

These start from about £500 for a bare drive, but average £700-£1200 each. They come in single, dual and quad speed configurations, although many can read data faster than they can write it. Only Philips drives can write PhotoCD format.

RECORDABLE CD'S
These come in capacities between 158 and 700Mb, and are capable of holding up to 80 minutes of stereo music. The brand you choose depends upon your budget and your requirements. TDK is the brand we use at PC Review.

SCSI INTERFACE
To attach your CD-ROM authoring hardware to your PC you'll need the correct interface. Luckily, 99 per cent of writers include a dedicated interface. If you don't already have an interface, we advise you to check out the Adaptec range.

LABELLING KIT
You can't write on CDs with a normal pen, but a labelling kit enables you to create labels on your printer and stick them on, to give an added layer of protection. We use the Neato kit.

AV DRIVE
To maintain a constant write speed. You can get by without one if you're only writing data, but for recording and writing music or animation, an AV drive is essential. We recommend the Micropolis.

LARGE HARD DRIVE
Unless you're using your writer to back up your hard disk, you'll need somewhere to store data while compiling a CD. 2Gb will give you space to store two or three CDs worth of info.

Burning your own CD-ROMs is easier now than it's ever been. And best of all, the prices of disc writers are falling every day. Isn't it time you started to roll your own?

potential, self-expression, enjoyment and functionality. A high-capacity, recordable storage medium offers many benefits, and manufacturers have been developing recordable CD technology as the answer for four or five years now. Yet even as recently as three years ago, so-called experts with extremely short technological memories were predicting that writable CD would never become an affordable reality for home users. They were wrong, as usual, and right now, you can go out and set yourself up with a home recording studio for under £1000. Okay, so a grand isn't exactly what you'd call loose change, but when you consider the creative, practical and financial potential of owning a CD writer, you'll appreciate that it's really more of an investment than money down the drain.

Now for a bit of background. A CD writer uses special blanks known as gold discs. These disks look the same as ordinary CDs except for their gold or metallic green coloration. This is due to a special layer in the resin which can be cut away using lasers. It's these lasers that are used to record information onto CDs.

In a sense, CDs work much like records. With a record, a continuous track is cut into the vinyl. A needle passing over that track vibrates into an amplifier which produces music. With a CD, however, the track is not continuous. Instead, it's a series of holes and short grooves which represent the ones and zeros of binary data. These holes are far too tiny to be seen with the naked eye. The tracks are concentric and unlike a record CD-ROM information reads from the centre of the disc to the outside, rather than the other way around. The disc is read by a super-fine laser beam, which relays information back to a processor. This reconstitutes the binary sequence. Binary is the language of your computer, so the data needs no further translation. Because it's possible to encode audio and visual information digitally, CDs are equally at home storing music, movies or a copy of last year's accounts.

All current CD writers are SCSI devices, which means that they connect to your PC using a SCSI interface. Unlike hard drives, the CD writing process is extremely sensitive to any form of interruption, and even the slightest additional activity on a SCSI bus can be enough to trash a CD. As blanks currently cost about £7 each, and you can't overwrite data once it's been recorded, you really don't want to waste too many. For that reason, most writers operate from their own isolated SCSI card to avoid unwanted interruptions. A constant flow of data from the hard drive is also important, especially

You can make up your own music compilations, or even convert old tapes or vinyl into audio CD.

when dealing with audio or visual data. While you can attempt to use an ordinary, high speed hard drive for storing information prior to writing a CD, this can lead to a loss rate as high as one in ten CDs. To avoid this, you'll need a special hard drive known as an AV drive which provides the continuous, steady data rate required.

When you buy a drive, it should come with a selection of software for writing data in a variety of formats. Unless you buy a Philips drive, you won't be able to write PhotoCD format, but the Hewlett Packard drive we've been using for this feature can manage every other format. The software is easy ▶

CD REViEW
Learn about CD-ROM authoring with the One Minute Guide on this month's CD Review.

COMING SOON
In two months' time, PC Review will be taking a look at some of the CD writers that are available and asking which is the best one for you?

CDs are equally at home storing music, movies or a copy of last year's accounts.

And for further information...
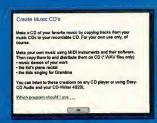
On CD Review, we bring you an interactive program called the One Minute Guide. Normally supplied with the Hewlett Packard Surestore 4020I writer, it's packed with advice.

Running the program you'll be taken through a series of menus and screens about writing CDs.

Four areas of CD authoring are covered, including music CDs, archive files and backups.

Can't help feeling, though, that the software glosses over copyright issues.

The One Minute Guide also goes through the software used to write your own discs.

FIVE GREAT THINGS YOU CAN DO WITH A CD WRITER...

1. Make your own music compilations by copying the data straight from your existing CDs, then writing them onto new CDs. Or you can record original albums using a sound card.

2. Hard drive backups. If you copy all the essential files from your hard drive onto a CD, it's an easy task to restore your hard drive should the data ever become damaged.

3. Build a media library by storing clip art or audio files.

4. Make your own multimedia presentations. The capacity of a CD enables anyone to create them for work or fun. Be the first person to send a multimedia CV to a potential employer!

5. You can make back ups of your software library, but if you distribute them as copies then that'd make you a software pirate! It can however save you space on your hard drive and the expensive of tons of floppies.

Recording a CD is as simple as copying files in Explorer or File Manager. It's ideal for backing up your hard drive.

to use, but really is not optimised for flexibility. For that, you'll need a dedicated commercial package such as *WinonCD* which is available from CD Revolution. *WinonCD* will make the most of your CD space, and writes all known data formats, including even the obscure ones.

Once you're set up, it's no effort whatsoever to start creating your own discs and the possibilities really are endless. The most obvious use of a CD writer is to make backups of your hard drive. A normal CD can store about 650Mb of data, which is more than enough to back up all the really important stuff on your hard drive. Because CDs are durable, you might even want to use them for archiving data that you don't use on a regular basis such as pictures, sound samples, MIDI files and even utility programs. If you're a bit more adventurous, you could even convert ordinary wave files into regular audio CD tracks and make up your own music CDs.

Unfortunately, using a double speed writer, each CD takes about half an hour to

> ## Once you're set up, it's no effort whatsoever to start creating your own discs. The possibilities are endless.

write, so it's no substitute for mass production methods, although it's much faster than tape drives for archiving purposes. Whatever you choose to do, once written, the CDs behave just like any other commercial disc.

The upper (label) side of writable CDs is extremely fragile, and if you scratch it, the CD will be ruined. However, you can't use ordinary sticky labels to protect it because the glue damages the surface. We recommend a commercial labelling kit such as the Neato. The labels use a special non-destructive glue formulation, and it comes with templates so you can print professional labels that will add an invaluable layer of protection to your CDs.

And finally there are the copyright issues to consider too. Writers can be used to copy most commercial music and program discs, but unlike floppy disks, where you're allowed to make a single copy for backup purposes, no such provision is made with CD products. You might be tempted to consider putting all your games onto a CD and lending them to your friend. Don't. It will lead to trouble. And if you make up unique compilations of your favourite music tracks culled from your CD collection, you still run the same risks as you would if you were engaging in home taping. So beware! They'll get ya. *(MB)*

Publishing your own CD-ROM in 10 steps

1 Planning is all important and will save you burning poor discs, thus saving you readies. Before starting the project, consider carefully your market, your free time and your funds.

2 Choose your CD-ROM authoring software. Choice is currently limited, but we use *WinonCD* to produce CD Review every month.

3 Design your multimedia masterpiece using multimedia authoring software. You could use *Macromedia Director*, *Authorware*, or even *Scala MM100* (reviewed on page 90).

4 Convert any printed documentation to electronic form and decide how you want to hyperlink the various texts in your document. Use the multimedia authoring software to set up these links.

5 Scan in the required graphics. Remember that larger graphics will take longer to load up. While you're thinking visually you might also design the CD-ROM cover.

6 Test your CD image runs okay from the hard drive.

7 It's a good idea to defragment the hard drive containing your CD image. This will speed up access times.
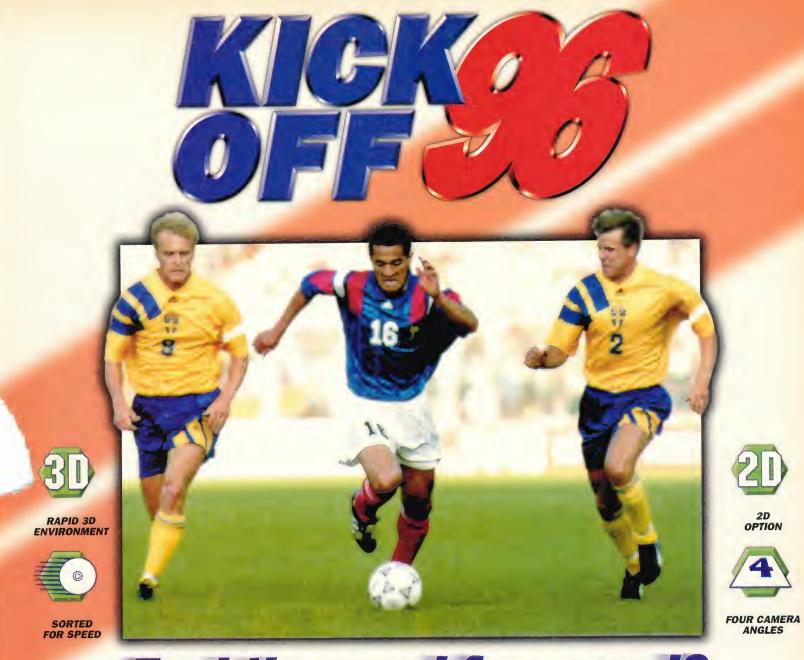
8 Despite all this high-technology, you might still want to produce a printed user manual! This need only be a few sheets of paper with the installation details. But if there's anything tricky about using your disc, explain it first.

9 Cut your first CD, and test that everything works. We test the CD Review disc on several PCs just to make sure everything you need to run the disc is on it and not on our mastering hard disk.

10 Produce your writable one-off CD-ROMs for final testing and fortune-raking. You're there.

Phone book

CD Revolution - 01932 562000
Hewlett Packard - 01344 360000
Micropolis - 01734 751315
Neato Multimedia Replication - 01264 336330
Quantum - 01344 353000
TDK - 01737 773773

Everything You Ever Wanted To Know About...
MOVIES

MR. SHOWBIZ

If you're going to click for flicks, there really is only one site that should be barking at your bookmarks on a daily basis. *Mr Showbiz*, the glitzy, frisky entertainment e-zine has it all. Their Celeb A to Z Star Bios section puts most homage pages to shame, their daily updated and bitchily opinionated movie news delivers super scoops with a sly growl and a knowing wink. Best of all, their harsh-but-fair movie reviews not only deliver real critical clout but *Mr Showbiz*'s pack of Hollyhacks even comes screaming back from screening rooms to hurl the odd exclusive on-line. With snazzy design, sassy sarcasm and a roguishly wonderful regular column by Tony Hendra aka Ian Faith from out of *Spinal Tap*, the utterly independent Mr Showbiz would rather ooze class than kiss Hollywood's arse. Even better than the reel thing? Yeah, always nice to hear that one again isn't it…

Mr Showbiz can be found at http://www.showbiz.com

Sites! Cameras! Time to probe the electro dimension and click through the pick of the flicks on the Net and CD-ROM.

First, what anyone with a modem already knows: when Miss Internet meets with Mr Movies their most memorable moments of media-melding are spent in Cardiff, home of the *Internet Movie Database*, an interactive extravaganza which houses every detail of every actor in every movie ever. Nearly. If the entire contents of the *IMB* were bound together in an Earth book the resulting 19,786 volumes would take up the entire land area of Dartford town centre 16 times over. So please, don't even think of printing the bloody thing out. Especially if you live in Dartford town centre.

Likewise, every CD drive owner already knows about *Cinemania 96*, Microsoft's world dominating (yawn) tome of celluloid seminalness. Over 20,000 films from around the world are mentioned (including made for TV ones). Most are covered with snippety reviews, though bigger flicks are judged by such cinematic scribes as Roger 'Thumbs Down' Ebert, Pauline Kael and Leonard Maltin. The 20-odd tip-top ones have video clips of important scenes, plus on-set stills, audio clips etc. It's all hyperlinked so you can browse the anal annuls of film clickety-split. Glory be if you have a modem too as you can update *Cinemania* on-line through Microsoft's *Explorer*-accessed site.

Screaming Taranteenies! Quent's Cult thrives on-line.

A cheaper, but only slightly less worthy choice on CD is the *Blockbuster Video Guide to Movies and Videos*. Its contents include 21,000 reviews and some 5000 photos. Maybe it lacks the flair and the critical authority of the big name reviewers in *Cinemania*, but at £20 you can't complain.

Anybody on the Net will be aware of the studios' heavy presence there. From MGM to Universal to Warner Bros to Buena Vista, each film factory has a showy page promoting the pants off the greatest, latest and lamest releases. Acknowledged as the glossiest sites around, most are trashily flashy affairs, with each blandbuster boasting immaculate images, the odd interactive game and a blitz of next big thing biogs. But, Hell, you're paying them to look at their adverts, and new Net or not, that ain't the done thing.

The best that studio sites have to offer the wired punter is video clips of upcoming films. But on-line time is money, right? Bursting its cyberguts with the plushest previews is *The Trailer Park*, the most comprehensive sneak-peek resource on the Web. Up-to-date, independent and now with an archive of over 200 past clips, this is the site to see.

But are these clips just compact parts of films actually worth seeing or not? As for Earth magazines, both *Empire* and *Premier* have respectable enough Web sites with reviews, news and magazine features. As with most mags shoved on-line, they do seem to be a promotional afterthought. You could say the same of *Flicks*, the glossy freebie often kicked under the seats to rot away with the King Cone wrappers. This, however, has an excellent, regularly updated home page, servicing the UK with release info and screen trivia. The content, though, is mainly American. As are most cine e-zines. *Hollywood Online* is fine for interviews and tinslechat, but what about, like, depth. Scuttle up to the podium, *Film Scouts* and let out a phoney sob as *PC Review* awards you with the Best New E-Zine What Covers Foreign Movies Award. Relatively new to the Web, and with a Virtual Cinema navigation theme that actually works, from mainstream

From MGM to Universal to Warner Bros to Buena Vista, each film factory has a showy page promoting the pants off the greatest, latest and lamest releases.

Discs of thistle

Hollywood landed on Scotland last year, and hence Scotland landed on CD-ROM. We refer of course to Rob Roy and Braveheart, both of which were afforded CDs of hitherto unknown celtic ferocity.

Oooor! Angus! No-one molests the cattle of an Irish... er, Scottish historical icon. Meet Liam Neeson's Rob Roy in the virtual highlands.

Oooor! Hamish! No-one camps in the glens of an Australian-American... er, Scottish historical icon. Mel Gibson bellows with Gaelic pride in Braveheart.

Microsoft's Cinemania 96 rates Jaws with four stars, and honours the film with a fully blow-up-able photo, dum-dum-dum-dump audio clip, tiny letter-box video clip, four reviews, plot outline, cast and credits list. This is about the fullest treatment any film gets on Cinemania.

Aw gee chucks, Forrest. You're all on CD-ROM. Yes, that's right. The nostalgic American blockbuster is fully detailed on disc. A large part of this CD focusses on the music that was used with the film, but there's also a full script and some insight into America in the days of Gump.

Peer into Doctor Casey's Cabinet at http://www.cat.pdx.edu/~caseyh/horror/index.html

The Electro-Usher guiding you through the, like, Virtual Screening Rooms may well be a tired wired concept worthy of a swift cyberslapping, but Film Scouts be a pick of the clicks. FACT.

to minor indie movie, it covers the lot with swanky style and critical bite.

Winning the equivalent award for CDs, by default, is *Stars de Cannes*, a stylish disc all about Europe's premier, palm frond frilled film festival. But slick as it seems at first, it transpires that the disc's main features are mere slide shows on talents like Sharon Stone, Brigitte Bardot, Kirk Douglas and Hitchcock. It goes over the top on Depardieu. There are pictures of the hotels in Cannes, details on winning films each year and, curiously, an ad for Nescafé. After an hour or so this glorified photo album you'll need a cup.

Empire on-line hits you with current movie features. Ow.

As this is being typed, thousands of movie bores are ricocheting their bloke-in-video-shop chatter around the Web. But while sites like *The Teenage Movie Critic* offer up the odd insight, most on-line loudmouths aren't worth bothering with. Best leave it to the pros, eh? If you want honest opinions with well-informed arguments, it's best to ignore the bile-fuelled bias of *Mr Cranky*. Still the mean spirits and unique slating system are a refreshing if tart alternative to the Net's

over-population of hurray-for-everythings. Dare you to flame the grumpy old sod.

The Web's bloated belly of homage pages has only encouraged those suffering from Obsessive Anal Disorder. Now *Yahoo* can offer homage pages on every star from Chuck Norris to Laurence Olivier. Decent celebrity pages are hard to come by, and you can point a taunting finger at two specific species of Net nutters.

Firstly there are your attention-seeking geeks. How do you get more people to visit your electro-den? You scan in a couple of star photos, list a couple of films they're in and, add big flashing woefully misspelled headline, instant fan page! Yay? Nay. Hence the current glut of half-arsed efforts passing themselves off as De Niro/Nicholson/Pacino shrines knocking about the Net.

Then you've got the revoltingly devoted, who slap their poster plastered bedroom walls on-line and cyberslobber their stalker obsessions at the usual vacantly glamorous pin-ups. Although Winona Ryder, Meg Ryan and the worryingly young Christina Ricci all have far too many pages devoted to their

faces, it's Sandra Bullock who leads the way with a forehead-slapping 49 homage pages. Typical is *The Sandra Bullock Page* where you can stare at a massive gallery of stark Bullock naked pictures and refrain your brain from retaining fascinating Sandramation like "her ambition in life is to get Tom Jones' autograph". This is, of course, very exciting.

But star homage pages aren't all set-up by stalker-types. To see how it should be done look at the *Clint Eastwood Page* which covers every single Clint Flick ever with breezy ease. It maintains a balance between admiration and information, as does the slick *Marilyn Shrine* which only lets itself down with its Monroe stamp collection scans. Then there's *Homage To Steve*, a right smart Steve Martin site that wisely focuses on his wilder 'n' crazier Jerk times, and probably knows more about Steve's career than Steve does at the moment. CD-ROMing Clintists should see *Eastwood*, while Marilynites of a similar hardware persuasion may be interested in *Bernard of Hollywood's Marilyn*.

And if all this wide-eyed staring at the stars gets a bit much, as it will, you can always nab the antidote in the form of the deliciously bitchy *ASG Anti-FAQ*, a scurrilous gossip gobbing, randy scandal centre for celebrity sleaze-slinging, hurling libel pies in the faces of your not-so-favourite stars. *(SC)*

Buyers Guide: Video

With a video capture card you can be a player in the multimedia revolution. We review six of the best boards available...

Whether you're a multimedia publisher or a student dabbling on the leading edge of technology, there are tons of things you can do with video footage if you can get it into your PC. Of course, you could just use commercial animation clips or pay professionals to record it for you, but there's nothing as exciting as being able to record and edit your own video footage.

To do that, you'll need a video capture card, and there are lots of interesting options available. All video capture cards are designed with a single end result in mind: to convert analogue video, TV or camcorder footage into a digital data stream that you can store and edit on your computer. What you can do with that footage depends upon the duration and resolution of the footage you've recorded.

The digital data is stored using various encoding algorithms known as codecs. Some codecs provide high levels of quality, while others result in very compressed data files. Others still produce images with very good colour reproduction. Most capture cards are supplied with a couple of codecs, and although a few generic ones are available for anyone to use, many are specific to particular pieces of hardware. The one thing that all codecs have in common is the fact that they generate a universal file type known as a Video for Windows clip.

Clips of this type are identified by the three letter suffix AVI, which stands for Audio/Video Interleaved. Some types of codec (and their resultant AVI files), can only be replayed on computers with the correct hardware acceleration chips in them, and these chips are generally to be found on video capture cards. They enable the PC to perform faster or more complex compression techniques than would otherwise be possible. This in turn means larger video frames, a faster replay rate and more colour.

With the best codecs and hardware, you can record footage at a level of quality that's superior to normal TV. With such cards you can output your work back to video tape. Cheaper systems enable you to produce high quality half or quarter screen AVI clips perfect for multimedia applications, whether it's a digital catalogue for estate agents or a video resumé for enterprising job seekers. There are cards for every need, so here's your chance to find the perfect one for you.

DEVELOPER
Video Logic
SUPPLIER
Video Logic
CONTACT
01923 260511
PRICE
£116.33

The Captivator isn't highly specified, but its low price and its ease of use make good for beginners.

7

PC REVIEW VERDICT

CAPTIVATOR

Although it's probably the oldest, and it's certainly the least powerful of all the capture cards here, there's still a niche for the Captivator card. At £100, it's cheap, and you could argue that its lack of features imbues it with a simplicity that perfectly matches the target audience. It's not plug and play, but nor is it remotely difficult to set up, so it must be well designed.

The Captivator doesn't provide any sort of hardware acceleration at all, so the resolution of any animations captured with it, are limited. VideoLogic includes its own YUV codec, enabling the capture of hi-color clips at quarter screen size. If you try for a full 24-bit capture, you'll be lucky to get a window 150x120 in size, especially if you use the full video replay rate of 25 frames per second. Of course, you could always lower the capture rate to 10 or 15 frames per second, in which case you could manage a higher resolution.

For on-screen multi-media work, you could certainly get away with less colour, and nobody expects full-screen AVIs in any case.

Most multimedia video is no more than a quarter screen in size. For single frame capture, the card will manage up to 640x480 in 24-bit colour. A perfect beginner's card.

DEVELOPER
Aztech
SUPPLIER
Aztech
CONTACT
01734 820840
PRICE
£179.95

Easy enough to set up but choosing the right capture rate is tricky. An okay all-rounder.

6

PC REVIEW VERDICT

VIDEO GALAXY GAMMA

Accelerated capture and playback of AVI files is a feature which enables you to record live TV or video footage at higher rates than is otherwise possible. The Gamma is the cheapest card to include this feature and is like a big brother to the Captivator.

However, the acceleration doesn't seem to yield the benefits you'd expect, and even at low resolutions the card dropped frames. There were more efficient codecs, but at no time did the Gamma really seem to live up to the promises on the box.

Perhaps video capture never was this card's forte – it also comes with a built-in TV tuner and some nice software for you to watch TV in a window on your desktop. You could just as easily watch video if you pipe it in through one of the external connectors. The Gamma can also use an add-on teletext module. Even more interesting, is the optional MPEG add-on kit which lets you to watch VideoCDs or replay MPEG footage from directly within your programs.

The card is very easy to set up, and we had no problem allocating RAM for the capture drivers, but determining the best capture codec, frame rate and resolution, turned out to be a big challenge. For single frame capture, it manages a generous 768x512 image size in 24-bit colour As an all-rounder, it's a good starting point at an affordable price.

capture cards

VIDEO BLASTER RT300

Here's another long-in-the-tooth card that still holds its own despite its age. The RT300 has been around for a few years now, and this new version of it consists of a revised board. Nevertheless, it's older than the Plug n Play standard, and that may be its downfall.

Some Plug n Play (PnP) motherboards, are excruciatingly difficult, if not impossible, to get set up and working. We tested two cards on three different machines with nearly every conceivable configuration of graphics cards, operating systems and memory. And we never truly got the kit running.

We plopped the RT300 into an old non-PnP motherboard and it worked like a charm first time. Two hours with Creative's tech support, and half an hour with the motherboard

manufacturer's tech support never resolved, or even accurately identified the problem with our PnP machines, however. This is a tragedy, because when it works, the RT300 is easily the best of the non-MJPEG boards, offering tons of different capture codecs, and utilising the Indeo i750 video processor to provide half screen capture and playback at up to 30 frames per second. Whilst the Indeo 3:2 codec provides the best general compromise between image quality and file size, you can choose the one that best suits your requirements and your equipment. It's not quite as flexible as MJPEG, but nearly.

This is a card wholly dedicated to capture for multimedia purposes – most likely in a semi-pro or commercial environment. It

comes with the superlative *Adobe Premiere* software for editing your video clips, and *Asymetrix Presentation* for putting together multimedia projects.

If you have a 486 or a non-PnP motherboard, we'd positively recommend this card. If you're not so lucky, think carefully about the hair-tearing frustration you might be letting yourself in for before you buy.

DEVELOPER
Creative Labs
SUPPLIER
Creative Labs
CONTACT
01245 265265
PRICE
£299.63

PC REVIEW VERDICT
Temperamental with Plug n Play motherboards, but the RT300 offers flexibility at a good price.
8

WIN/TV CINEMA PRO

With the CinemaPro, we're moving away from video capture and towards TV cards. It has a built-in TV tuner, and can accept video input from multiple composite sources. It uses a variety of interpolation techniques to ensure live picture quality. You can even specify the scaling method used. The CinemaPro also has Teletext as a standard.

When it comes to video capture, the card is slightly less impressive than the RT300. It uses 4:1:1 lossless YUV compression, which delivers up to 24 frames per second at a

resolution between 160x120 and 320x240. Although no explicit mention is made of acceleration in the manual it seems unlikely, even given the compressed codec used, that the card could offer this level of performance without dedicated hardware

In fact, it's comparable to the RT300 in terms of price and performance. Because it's a PNP card, the Win/TV is relatively simple to install as far as live input and TV viewing are concerned, but when it comes to configuring the capture part of the card, it gets tricky.

When it comes down to a choice between the two, this one is good if TV, live video or Teletext are important. But the RT300 still takes the prize for multimedia recording.

DEVELOPER
Hauppage
SUPPLIER
ODT
CONTACT
0171 378 7309
PRICE
£280

PC REVIEW VERDICT
The Cinema Pro is distinguished by it's quality TV and video overlay. It's the only board with Teletext.
7

MIRO DC1 PLUS

Of all the cards we've seen, the DC1 Plus is the strangest hybrid. It's one of only two that has the ability to capture using the MJPEG format, the other being its high-end PCI stable-mate, the DC20. Unlike the DC20, which is a PCI board and can utilise the extra speed offered by that connection method, the DC1 plugs into your PC via a standard 16-bit ISA slot. It's comparably priced to Creative's RT300 card, but offers a different level of playback power. Whereas the RT300 supports tons of different, generally high-quality capture codecs, the DC1's MJPEG format

can be altered to match the other components of your system. If you have a slow hard drive, drop the quality, if you're encoding for output to video, ramp it up to the max.

One compromise made in the name of economy is any form of image overlay. The card wasn't designed for watching TV or videos, but it doesn't even provide you with a visible image of what you're digitising. Still, there is a composite out socket which you can connect to a TV. This is quite a limitation, but given the wonderful capture quality at greater than half-screen size, it's a sacrifice

you'll make if you have a means of viewing the signal as you work.

The miro DC1 Plus was one of the easiest cards to set up, and includes some excellent software. Recommended.

DEVELOPER
Miro
SUPPLIER
Miro
CONTACT
01494 510250
PRICE
£350

PC REVIEW VERDICT
With it's combination of quality, high resolution and decent frame rate, the DC1 Plus is our top tip.
9

Easy to set up and advanced, this card comes at a price. Well up above usual video standards.

PC REVIEW VERDICT

7

MIROVIDEO DC20

Although it's out of the price range of most home users, the DC20 demonstrates just how far you can go if money's no object. It's the upmarket version of the DC1 Plus, and because it connects to your PC via the PCI bus, it's capable of better performance. Like its little brother, it uses MJPEG compression, which is applied directly to the YUV input signal be it from video, a camera or TV. It's not designed as an all-rounder and doesn't come with any frills like a tuner, MPEG decoder or Teletext. What it does do

damned well is encode the highest quality full-screen animation possible, easily handling S-VHS standards. Thus it's ideal for output back to video.

However, with all that power comes a price. It may have the ability to record S-VHS quality footage, but there's every likelihood that your hard drive isn't fast enough to record the data without skipping frames. Even at 3Mb a second you can lose quality.

The DC20 is the only board that can record both fields of a TV image (effectively

increasing the load to 50 or 60 frames per second) in full-screen at S-VHS quality with 44.1kHz stereo audio without missing data. If you want the best, it's your only choice.

HARD DECISIONS

It doesn't matter how good your capture card is, if your hard drive isn't fast enough to support it, you'll lose data when you try to record. If you have a lot of memory, you can minimise the effect by buffering into RAM first, but when you're talking about writing anything up to 3.5Mb of data each second, you'll appreciate that available memory can become exhausted. Old hard drives sometimes write data as slowly as 500k per second, while even relatively fast mode 3 and 4 EIDE drives may still only manage a sustained transfer rate of around 2Mb a second. This should be enough for most purposes, but if you plan to do some serious recording, you may wish to consider investing in a fast SCSI 2 or SCSI 2 Wide drive, and an appropriate interface.

WHAT SOFTWARE?

For serious work you'll need serious software. There are only two real Video for Windows or Quicktime editing programs, and both are available in 16-bit and 32-bit versions. The first is Premiere 4, an early version of which is already bundled with a number of these cards. The other package, Media Studio Pro 2.5, is equally capable, and costs a little less. You can find out more by phoning Adobe on 0131 451 6888 or BIT UK on 01420 83811.

IN COMPARISON

All the cards here are able to capture single images more easily than a sequence of frames. That's why the single frame resolution is higher than the AVI size. When measuring AVI throughput, we deliberately chose to go with 24-bit images recorded at the maximum PAL rate of 25

frames per second, which is the most demanding specification to record, and generates the most data.

In real-life, you'd be more likely to record 16-bit data at 15 frames per second so you can increase the frame size accordingly. It's also worth bearing in mind the fact that,

although the DC1 Plus is not capable of direct overlay, most recording packages show you a live preview image which you can use to see what you're going to record. You can't use that particular card to watch videos or TV on your computer, but that's the only real limitation.

	CAPTIVATOR	VIDEO GALAXY GAMMA	VIDEO BLASTER RT300	WIN/TV CINEMA PRO	MIRO DC1 PLUS	MIROVIDEO DC20
TV tuner?	No	Yes	No	Yes	No	No
Teletext	No	Optional	No	Yes	No	No
Video overlay	Yes	Yes	Yes	Yes	No	Yes
Single frame size	640x480	768x512	640x480	640x480	384x288	768x576
Accelerated replay	No	Yes	Yes	Unknown	Yes	Yes
AVI size (24-bit)	160x120	160x120	320x240	240x180	384x288	768x576
Best capture format	VideoLogicYUV	YUV 4:2:2	Indeo 3:2	YUV 4:1:1	MJPEG	MJPEG
Inputs	S-Video Composite	S-Video Composite x 2, TV	S-Video Composite x 3	S-Video Composite x 2, stereo audio (phono)	S-Video Composite	S-Video Composite
Outputs	None	Speaker	None	Luma, Chroma, stereo audio (3.5mm jack)	S-Video Composite	S-Video Composite
Type	ISA	ISA	ISA	ISA	ISA	PCI
Other connections	None	Internal VESA lead	None	External loop plug	None	None
Software	Video for Windows CD	VideoStudio	Premiere LT, Presentation	Proprietary	Premiere, 3D FX	Premiere, PhotoShop

Conclusion

Whatever your budget, you can enjoy the pleasure of recording your own computer video. At the affordable end of the market, the Captivator may not pack a huge punch, but it's certainly a good way to get started. Because it doesn't have accelerated playback of AVIs, you can distribute any animations that you record without having to downgrade them to an inferior format. Although it proved difficult to configure on our Windows 95 Plug n Play machines the

Video Blaster RT300 has long been a top favourite, and must surely win in terms of multimedia encoding. However, the DC1's MJPEG is a powerful challenger provided you're recording footage to be replayed on a machine with another such card inside it. Its higher resolution and greater compression make it particularly attractive for people who want to make their work stand out.

Of course, if you take money out of the equation, the DC20 is simply one to die for,

and our local bank manager is likely to receive a grovelling visit quite soon! The other cards, while less capable, provide the added bonuses of TV tuners, video overlay and sometimes Teletext, so if you want a card that doubles up and gives you such features, give them a look

Despite its lack of overlay facilities, the miro DC1 Plus takes the prize for sheer resolution and image quality, but the RT300 and Captivator are right on its heels. **(MB)**

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PCREV

FIRST SERVE

The making of Davis Cup Complete Tennis

Anyone for tennis? PC Review goes behind the scenes and brings back a report on the making of the latest sports licence to hit the PC.

Wimbledon has already left its indelible mark on the English summer, but the real battle of the tennis giants is yet to take place. Facing off against Codemasters' *Sampras Extreme* is *Davis Cup Tennis*, Telstar's bid for on-court supremacy. Under development by South East-based Dome Software since last summer, *Davis Cup* marks a departure from the current vogue for recreating sporting events using polygons. Instead, players will be served up with an enticing photo-realistic graphic style that Dome is confident will endear the game to the armchair tennis fan.

"What we've done is to ignore the rest of the industry," says chief Dome programmer Jon Court. "We've disposed of the 3D polygon motion-captured characters and gone for realistic video captured images with tons of animation frames… and tons of playability." The obvious limitation of this approach – the lack of movable camera views – doesn't worry Jon. "Once you've seen the different viewpoints on offer in a 3D tennis game you're always going to settle for a behind the player viewpoint."

The inspiration for the game came not so much from the sport itself as previous computer implementations. Jon: "I simply think tennis makes a good computer game – I don't mind the sport, but as far as I'm concerned we're here to come up with a good game." Indeed, Jon admits that the ageing *Super Tennis* on Nintendo's SNES console is a favourite. "If you go back to it now it looks pretty chronic, but it's still a fantastic game to play."

It's that graphical style which looks certain to net potential players. Digitising actors and placing the animated images in a fully interactive game has always been fraught with difficulties, but it posed few problems for the Dome team. "It's because we thoroughly planned it all out first – filming everything to a set list, and so ensuring that all the moves would be possible."

Green screen filming

Although real tennis names are missing from *Davis Cup*, there's still a wide range of players to play with or against, with differing styles and abilities. This may suggest real problems for video-based sprites, but only two people (male and female, obviously) were used for the filming. "As well as shooting the bodies using green screen filming, there are 48 cameos we can place on the bodies," explains Jon. "We also processed the graphics frames with a self-made utility, enabling us to instantly apply Asian, black or other skin tones to the bodies."

Re-using the same body animations for the players may restrict differences in movement style, but consider the fact that there are almost 2000 frames of animation for the players, and it's understandable. Add to this number the extra cameo images, the

Here we see the game being played out on a hard outdoor court. Naturally, players must learn new skills and reaction times for each time for each type of surface.

A scene from a doubles match. Notice the way the players all look slightly different?

animations for ball boys and line judges, and the inclusion of SVGA modes (not pictured in this preview, sadly), and you've got one very graphically intensive game.

Dome is keen for the game to be seen as a real sim, but the fun factor hasn't been ignored. "We felt it would be important to include a party mode in addition to the usual tournament games," says Jon. "Twelve people can enter their names and winner stays on. We did take the idea of it being a fun event slightly to the extreme, even re-filming all the cameos with party hats on!"

Immersion in the sport

Anybody who has ever found themselves immersed in watching, or taking part in the real sport will understand how important the noise of the crowd and umpire are. *Davis Cup Tennis* utilises a mix of ambient crowd noise with specific samples to keep the audio continuous and context sensitive. Various extra shouts and heckles, along with the weighty tones of an umpire – the recording using a voice actor rather than a

genuine man of the match – add that final touch of realism.

Also of paramount importance in tennis games is simulation of racket control. "Effectively there's a choice of volley, lob, a high hit or a smash," says Jon. "On top of this players also have control of the direction of the ball by holding the joypad in the desired direction." This is an improvement on some tennis games in which the timing of the swing is the only factor determining the angle. Dome is paying particular attention to this crucial game element. Jon: "Testing of the control system is still going on. Indeed, it'll be fine-tuned right up until the game is finished to make sure we get it exactly right." A practice mode will ensure the player gets to grips with its subtleties before taking on the opposition.

When it comes to competition from *Sampras Extreme*, Jon Court is confident. "I can't really put somebody else's game down, but if you look at the screenshots of *Davis Cup* it's just so realistic. And once you've picked up the joypad you'll find it plays as good as it looks." *(MR)*

Even the activity of the net judge is turned into sprite animation.

Here's the full sequence of frames for a male player serving.

And here's a breakdown of a woman returning serve.

DOME WHO?
Although seemingly a new name on the block, Dome has actually been going for over three years now, having previously specialised in conversion work on a number of machine types. Titles with the Dome touch include PGA Euro Tour from Electronic Arts, Psygnosis' Puggsy, and the Jaguar version of Sensible Software's Cannon Fodder.

TENNIS WHEN?
You can find out for yourself if Davis Cup Tennis is set to win the game, set and match when Telstar releases the game in the Autumn. Call the company on 01932 222232 for more information.

It looks like its on TV, but this is a scene from Davis Cup Tennis. The developers have spent lots of time animating the sprites

No sports game would be complete with balletic movements, and Davis Cup Tennis is no exception.

A puff of chalk? There's no opportunity for contesting where the ball bounced in Davis Cup Tennis. What the umpire says goes.

Next Month
We'll bring you the world exclusive playable demo of Davis Cup Tennis – the PC Review Summer of Sport continues.

In the picture
In order to create the sprite sets, real players were filmed doing real moves. Who needs motion capture, eh!

Arnold Palmer!? He must be the oldest swinger in town (and other poor jokes).

LINKS LS

Is the new version of the world's number one golf game about to set a new all-swinging all-dancing standard? PC Review wonders what the LS stands for...

After a glorious bounding drive you can review the shot from several angles.

With so many viewing windows, you'll never lose your ball in the rough.

List the greatest golfers of all time and you can't get far without mentioning the name Arnold Palmer. He sounds more like a character from a Blur song, but back in the 60s he was the man. The Daddy. He also happened to be the man in the 70s and part of the 80s as well. And thanks to the new version of Access' perennially popular *Links* golf game, Arnie (as he is wont to be called in deference to his Schwarzeneggar-like stature on the tee) could be destined to be the man in the late 1990s too.

Links' pedigree in the short history of PC games is almost as proud as Arnold's in golfing lore. Back in 1991, it was the first game to be produced in (gasp!) 256 colours, and because it didn't have a 16-colour EGA mode it left PC gamers with low-spec PCs crying bitter tears of outrage. Oh yes, and you really needed a 386 to do it justice, which was no laughing matter when such a machine cost the best part of two grand. Nowadays, though, a Pentium PC can be picked up for half that, ideal for a game with

SVGA graphics, realistic 3D and complex golfing gameplay. Ideal, in fact, for a game like *Link LS*.

Sporting a casual jumper and natty pair of slacks, a delectably digitised Mr Palmer not only strokes his way round a couple of Hawaii's most beautiful courses, he shows you round the clubhouse and resort as well.

"It's an opportunity to play his course, see his animation and get a multimedia experience of some of his history and home life," Access boss Bruce Carver told *PC*

Arnold Palmer's Indoor Golf

He may not have lent his name to a PC game before, but you can be damn sure the world of commerce hasn't completely passed up the Arnold Palmer merchandising opportunity. Recommended for ages ten and up, Arnold Palmer's Indoor Golf comes complete with a miniature Arnie stuck on the end of a golf club, a green, a couple of bunkers and some interchangable snap-in clubs. It's not entirely clear how the game works, but a distinct lack of excitement seems inevitable. For more information, take a look at http://www.webtek.com/indoorgolf/ on the Web. $50 each plus P&P. Bargain.

The menu pops up when you move your cursor to the bottom of the screen. Handy, that.

Top left: If you're not happy with your shot you can take a mulligan and have it again.

Top centre: It's against the rules of golf to change your jumper half way through a game.

Top right: Arnold is aware of this obscure rule and quickly changes his back again.

Just above: But sadly it doesn't stop him hitting his ball straight into the lake.

Review as we sipped Bourbon on ice at the nineteenth. "We're trying to add more to the game so people can get the real experience of playing golf.

"Our concept is to have an on-going relationship with tour players to use their images in our games. Arnie, of course, is one of the legends in golf, and we have a contract with Davis Love III and several other very prominent names. We plan to use PGA players as well as seniors and the idea is to include them in their home environments on their home courses. We use a high-colour version of the VR engine from *Under a Killing Moon* so you can walk through Arnie's office and workshop where he builds his clubs, with his right-hand man explaining everything to you."

Even Carver admits that a VR walk-through of a Hawaiian clubhouse could be seen by many as multimedia fluff, but he's convinced that everyone's going to be impressed with the *Links LS* game engine. "Besides re-doing the terrain rendering portion, we completely reworked the ball flight so the ball behaves much more realistically. The ball dynamics are amazing.

It's almost like you're watching TV and it's incredible that we've achieved that level of realism," he gushed. "It's such a complex system now that it will take people a while to get used to it. This is much more of a thinking man's game, it's much more like real golf."

The trouble with all this SVGA realism and sophisticated ball movement is that players now notice all the minor kludges in the game system. "Little things that were OK now look like glaring errors," Carver laments. "Take the ball going in the hole, for example. The guy programming that has had to treat the hole with floating point math to make sure the ball disappears into the hole properly."

Access has also gone to great lengths to ensure the video footage of Arnold and the other three golfers in the game is fully integrated with the gameplay. "The most difficult part is digitising the video and making sure the images themselves are completely synchronised with the way they operate in the game," said Carver. "We have a lot of after-shot reactions as well as the ability to have four different camera

windows open with them all looking at Arnie from different angles. It took five people roughly a month to get all those animations put in, and while we were digitising we also had to remove his shirt so you can change its colour in the game."

But difficulties with digitising video footage are nothing when it comes to dealing with the dreaded Windows 95. "Most of our problems hinge around hardware and Windows 95," sighed Carver. "*Links LS* is so flexible in terms of resolution and memory that the major problem we face is that Win 95 is real fickle the way it allocates memory – it gives it to you and then wants it back, sometimes causing a crash. If *Links LS* crashes under Win 95 it takes you right back to where you were on the course."

Carver has a team of 20 artists and programmers working on the project, and then a truckload more people in the testing department. "The programmers are the heart of this and we're the group that's here til midnight every night knocking the last bugs out of it," he said proudly. "But everyone gives their heart and soul to it." *(OB)*

Things you probably didn't know about Arnold Palmer

- According to *Forbes* magazine, in 1994 he was fourth in overall earnings among athletes in the US, with $13.6 million – just $35,000 of which was from playing the Senior PGA Tour. Much of the rest came in endorsements.

- He hasn't won a Senior PGA Tour title since 1988 or a PGA Tour title since 1973.

- He's the president of Arnold Palmer Enterprises which is worth an estimated $175 million.

- He has won an amazing 92 career championships, 61 wins on the PGA Tour plus 29 titles.

- He won almost $400,000 in prize money from 1960 to 1963 alone.

Upgrade your PROCESSOR

Of all the upgrades you can perform on your computer, nothing increases raw number crunching power like a new processor. We show you exactly what's involved.

Over the past couple of months, we've been looking at ways to enhance your computer. Each of the upgrades we've covered so far have yielded a variety of benefits that ultimately improve the speed of your PC. However, when it comes right down to it, the thinking 'brain' of your computer, is the central processing unit, the processor or CPU, as it's called for short.

Of course, the ever accelerating drive of technology brings us a constant flow of new, faster CPUS. Every top of the range new piece of software, in turn, requires the newer processors. It's a pain, but to keep on getting the most our of your PC without replacing the whole thing entirely, the solution is to upgrade the kit you've got.

It has the responsibility
Your processor is the component inside your PC responsible for handling all instructions, orchestrating the other parts of the machine, and running any programs that you load.

These instructions are fed to the CPU in a binary format, consisting of ones and zeroes, but the way it interprets them differs from one processor to the next.

The speed of the processor is like the engine capacity or the number of cylinders in an automobile engine, but the processor version (386, 486, Pentium, etc.) equates to the quality of an engine. You could have an Escort with a huge Spitfire engine that shakes it to bits as soon as it starts up, or you can put in a smaller, but super-smooth Volvo engine, and it will power the car more efficiently. In other words, while processor speed is just that, raw power, it's the refinement that really makes the biggest difference. Higher numbered processors use more efficient sets of internal commands, and often have optimised architecture, both of which enable them to run more quickly.

But all that is just technical background information. You want to know what a new processor will do for your life, and the simple answer is that if you get a new, faster one,

you'll spend less time waiting and more time doing. Applications will run faster, rendering will be quicker, complicated graphic processes will take less time to apply, and perhaps best of all, your 3D games like the incredible *Quake* or *Duke Nukem 3D*, will run more smoothly, with more detail, in bigger windows and at higher resolutions. In short, a faster processor, will have a positive effect upon every area of computer activity, whether it's put to use in DOS or Windows. A good new graphics card might help, but if you want games faster, get a better chip.

Easy to fit, hard to choose
If all that seems too good to be true, well maybe it is because of all the upgrades you can add to your computer, a new processor is one of the easiest to fit and the hardest to choose. There are so many permutations, that it's almost be glib to try to summarise them here. Pentium-ready motherboards that don't accept Pentium chips, 486 motherboards that simply aren't upgradable, and

Before you start

Before you delve into your PC, don't forget to turn its power off. Turn off the supply from the wall socket too. You'll need to remove any fixing screws holding the case shut at the back or the sides. Be careful not to unscrew the power supply too. Its screws are new to the power socket, and usually set further from the edges of the case.

Once you've unscrewed the case, remove the lid or panel. This should be a matter of firmly sliding it backwards, possibly with a

tilting action to release any catches. Cases are designed to be opened, so if yours gives you trouble, take the time to examine it. Perhaps you're pulling or pushing it the wrong way.

The next stage is crucial. Once the case is open, touch any bare metal part of the inner frame. This should discharge any static electricity that might otherwise damage the delicate electrical components in there. Now you're ready to go to work on that CPU.
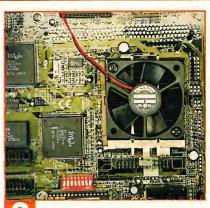
1 Okay. The back of your PC is off and you can see inside it. Half the physical labour is over with, and so is that first daunting glance at all the gadgets, wires, circuit boards and so on.

Stop. Don't touch anything. Once again we have to warn you about that static electricity which can seriously damage a microprocessor. So before you go to work ground yourself on your PC's metal frame or its power source.

Pull any intrusive wires to one side and tape them there if necessary. Now you have to locate your processor. If it's a Pentium it should have a small fan on top of it. Otherwise, it will probably have a heat sink on it which looks a bit like a bed of nails.

2 Once you've located the processor, you need to remove it so that you can fit your new one. Hopefully, your motherboard uses a ZIF socket – most PCs do these days. If you do have a ZIF socket simply pull the lever handle away from the socket, then lift it up. The action should be light and easy. The chip should become freely removable with no force at all.

If the CPU isn't in a ZIF socket, you'll need to very gently lever it out with a kitchen knife, working from one side of the chip to the other, maintaining equal pressure to avoid bending the pins. If the chip has a heat sink and/or a fan fixed to it, remove them from the chip using a screwdriver. Apply firm but steady pressure when needed.

What's he talking about?

CPU - Central Processing Unit
The brains of the computer. The faster and more refined it is, the more powerful your PC.

DIP switches
Used to set motherboard speed ratings, and the type of processor in use.

Jumpers
Small electronic shorting blocks used as switches for setting various parameters on the motherboard.

MegaHertz
The speed unit used to indicate how fast your motherboard runs. It also indicates the speed of a processor within a family.

Motherboard
The main board into which you plug the CPU, RAM, graphics and sound cards, and every-thing else. Different mother-boards run at different speeds, which are user-definable.

Overdrive
The collective name for a range of processors designed to work with any motherboard at all. They come in various forms, ranging from DX4 Overdrive up to Pentium 166 Overdive. You use DX Overdrive chips on 486 motherboards, and Pentium Overdrives on Pentiums.

Speed multiplication
The process of increasing your motherboard's base speed to synchronise it with faster CPUs.

ZIF (Zero Insertion Force) socket
A modern type of chip socket which enables you to insert and remove chips with no effort by using a lever.

Pentium motherboards that only accept chips made by certain manufacturers– these are just a few of the issues to be confronted when buying a new processor.

The first thing to determine, is whether or not your processor is upgradable at all. The processor is the largest chip in your computer, and if it's soldered to the mother-board, then you're stuck with it. In situations like this the only way to upgrade, is to buy a whole new motherboard. If you own a 386SX machine, you'll also need to buy a new motherboard if you want to upgrade to a 486 or beyond. If you own a 486 system, you can certainly add an Intel Overdrive processor to bring it up to 100, 120 or even 133MHz. Cyrix makes an equivalent range of chips called 586 processors, but these are less compatible.

If you own a Pentium-ready mother-board, you should check that it truly can accept a P24T Pentium chip because many so-called Pentium-ready boards are not. Even if you can add a P24T you should consider whether it's really worth it. A Pentium is a 64-bit chip, but a 486 only has a 32-bit motherboard, so the main benefits of the chip are wasted.

Pentium upgrades

Perhaps it would be better to go for a 133MHz DX4, or upgrade to a full Pentium motherboard? As for Pentium upgrades, there are a variety of motherboards out there to get, but the main determining factor is whether or not your motherboard supports speed multiplication. Most Pentium mother-boards are capable of running at 50, 60 or 66 MHz, and there's often a jumper which will increase that by a factor of 1.5, or 2, enabling the use of faster chips. The older motherboards, unfortunately, don't support this multiplication of power. In this instance, yet again, a Pentium Overdrive chip is the only viable option available to you.

To answer these questions, and others that may arise, refer closely to your mother-board manual, or seek the advice of the company that sold you the computer in the first place. Also, take the time to check that the processor that you're thinking of buying is meant to work with your motherboard.

If possible, try to get the sales staff to agree to a money-back return deal in the eventuality that the CPU isn't designed to work with your system. Many companies that sell processors already offer such deals. At the end of the day, the safe but expensive option is always to go for an Intel Overdrive chip, which is designed to work on both ordinary and problem motherboards. They come with comprehensive instructions, and are easy to fit. *(MB)*

Applications will run faster, rendering will be quicker, complicated graphic processes will take less time to
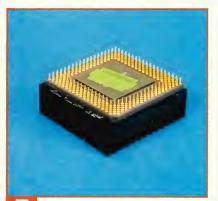
3 Before you put the new chip in place, you should reaffix the spiny-looking aluminium heat sink. This is an essential cool-ing mechanism. Just about all upgrade chips need a heat sink, and if you don't have one, you should purchase one before running the new processor. If you don't, permanent damage could be caused to your computer or the CPU. The heat sink should already come pre-glued, or with its own plastic fixing bracket. If it's glued, just press it onto the back of the chip. If it's a plastic bracket, the chip is inserted into the bracket, and the bracket is then connected to the heat sink. If your new processor comes with its own fan like Overdrives do you can ignore all this and just install it with its fan. (See step 5 for more.)

4 Now to insert the new chip. You'll notice that all chips are keyed, either by using a metal arrow, a red dot or some other marking in one of the corners. The chip socket is also keyed, using some form of marking. These marked corners should be placed together. Pentium chips actually have pins missing in one corner, so you can't insert them the wrong way round.

If you're of the ZIF socket persuasion, make sure the lever handle is open as far as it can go so the socket grips are out of the way. Drop the chip into the slot. Make sure it's all the way in and level, then slowly close the lever. In a non-ZIF socket, carefully position the chip, then firmly press it home, using even pressure on all sides.

5 Once the chip's in place, you should re-attach the fan and/or heat sink if it has them. If you don't have a fan, you'd be well advised to invest in one as it further helps to dissipate heat and reduces the risk of chip damage during the summer. The fan should simply screw onto the heat sink. Once it's in place, you'll need to set your mother-board's jumpers or DIP switches to indicate the new processor's presence. The exact settings will vary according to the processor and the motherboard, and you'll need the manual for both to set it up properly. Once you've done that, the installation's complete. You don't need to reconfigure your PC or anything like that. Your zippy souped up computer is ready to run!

THE MAIL

This month's letters page introduces the original Jack the Ripper and a vicar into centipedes. Funny bunch, you readers!

SLOW COACH

I'm the owner of a 486DX2-66 with 8Mb of RAM. I received the machine as a present last Xmas. Recently I have noticed that the latest software runs rather slow on this machine. So please will you mention in your reviews how well the games run on the minimum spec machine.
Christopher David Gledhill, East Driffield

Your not alone. Remember our reader survey? The results suggest that while 35 per cent of readers own Pentiums, 45 per cent are still using 486 machines. Thankfully only 2 per cent are still languishing with 286 processors. We won't be going Pentium-only, even if many games developers seem to be turning their backs on humbler specs in pursuit of glitzier presentation. We test games on a variety of machines and always do our best to point out where games run particularly poorly with slower CPUs, though we won't always state the obvious – that games will run faster with a Pentium chip. Final point. Have you considered upgrading your CPU? **Check out our guide on page 28.**

RIPPER

After reading your review of *Ripper* (PCR 55, score: 7) I popped to the shop to buy it. Imagine my surprise though when there was another game... also called *Ripper* and also by Gametek. But it didn't look anything like the one in the mag. Can you help?
Ray Aldridge, Kent

We contacted Gametek on your behalf and it turns out that there are two *Rippers*. One is an interactive movie starring Christopher Walken, the other... a guide to Victorian London starring Jack

the Ripper. We suggest you stick with the Christopher Walken one. Beware of imitations.

TOP 100

Could you do a Top 50 or Top 100 list in the back of each issue based on the ratings in your reviews? I'm sure there are a lot of gamers out there that would find it useful when buying older games.
Danny A. Kirkeby, Denmark

We're planning a Top 100 feature, in a couple of month's time. Reader nominations are welcome. Send in your top five favourite games to the usual address... and no nominating the *Quake Public Test*. We want finished games only!

RETRO ROCKETS!

Just a quick note to tell you how much I'm growing to like your revamped *CD Review*. I particularly enjoy your Retro Game of the Month feature. Although I must admit I was

2D graphics are easier and more fun to make than 3D ones. But we'll return to 3D in the new year. Or sooner!

sceptical at first – everyone's jumping the retro bandwagon these days – I've been quite impressed by the quality of the games you've offered. *Galaxi*, last month, was a fun jaunt back into my arcade days, as was *Defendroid* the month before. But I thought *Galaxi*, even though your version only offered four waves, was truer to the original than *Defendroid*.

A game I'd really like to see in future is *Centipede*, my favourite blaster of yore. And can you try and get a version of it that's as much like the original as possible?
Rev Michael Williams, via Internet

Just for you we'll do *Centipede* next

month. If you can't wait until then there's an arcade perfect version of that classic on the *Microsoft Arcade Pack*.

THE RETURN OF 2D

Couldn't resist writing in to say how much I enjoyed your 2D animation special. The PC fraternity's obsession with 3D graphics ultimately just means lots of games that look the same. And on top of that, whenever I try my hand at 3D graphics it takes ages, and all I end up with is shiny balls, chairs and lamps. It's just so dull!
Tony Easton, Halifax

Don't give up on 3D just yet. We'll be returning to that third dimension in the new year with a full commercial rendering program and a massive guide to modelling more than just balls, chairs and lamps!

CONTENTS

THE GENE MACHINE

Step back in time to the days of imperial facial hair with this thoroughly British game...

Sorry, but the time has come to play the patriotic card. Dealt as ever from the bottom of the deck, this little joker – God knows how we kept it back during Euro 96 and Wimbledon – is the last refuge of the scoundrel. But we're going to play it anyway. There just aren't enough British adventure games. The West Coast boys at LucasArts rule the roost and games from this side of the Atlantic, like the brilliant *Normality* from Gremlin, end up starring American characters anyway. Enter the *Gene Machine*. A thoroughly British adventure, proud of its heritage – not beer, birds and footie – but instead *Black Adder*, *Monty Python* and *Fawlty Towers*. Our finest exports.

Where it seems *de rigeur* to set adventures in dark, gritty futures, the plotline in the *Gene Machine* takes a far more gentile route, placing the action in the heady imperial days of Queen Victoria – the era of Jules Verne and H. G. Wells, with fantastic tales, stiff-upper lips and porkchop sideburns. Sure, *Gene Machine* involves meddling with DNA to produce genetic hybrids, but ▶

The chap in the hat's J. T. Ripper. Fanshaw thinks better of looking in his bag.

Docklands by night. In the Gene machine you'll travel by rocket, train, and submarine.

The Gene Machine comes complete with its own Pong simulator. "They'll never catch on."

"Perhaps we should raise the Sails captain?" Or we could await the invention of steamships.
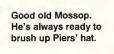
ABOUT TIME GENTLEMEN!

The Gene Machine is a seriously late game. So late in fact that it went through two names before it made it into the stores. So, if you read any previews of Victoriana and Sherington Fox (originally the name of the Piers character) then this is the game you've been waiting for.

instead of scary mutants, you get a polite cat-man type thing which looks like a feline… but talks.

The action starts with your hero Piers Featherstonehaugh, pronounced Fanshaw (silent e, silent t, silent h, silent e, silent r, silent t, silent o, silent e) returning from the colonies. The talking cat, named Experiment 73, pops by your house and explains that his creator Dr Dinsey is planning to build an army of mutants and conquer the world. So, before you know it you, and faithful man-servant Mossop, are taxiing around London trying to raise funds for an expedition to sort out this Dinsey chap and put the world to rights.

Trouble is, Piers is broke after

Good old Mossop. He's always ready to brush up Piers' hat.

living it up in the colonies, so some other source of funding is required. Perhaps you could pawn off your fiancées wedding ring? "Unless you've brought me a replacement of a decent size and weight, I don't even want to discuss the subject," says the lady to that idea. Or maybe a gamble with the old goats down at the Gent's Club? "I'm doing this, Fanshaw, because you're a desperate man, and desperate men make stupid wagers." How about persuading the Queen to give you the dosh? "If I were not a man of means, your Majesty, I would not darken your door with my lowly, poverty-stricken hide." Lies!

Mousing about London

You control the inventory, speech and actions using the mouse. Navigation around London is easy, with a map showing key points to visit. Click on a location and you're treated to a spookily rendered animation of your horse-drawn cab pulling up. The gag of Piers leaping out the cab and slamming the door on his man servant never wears thin – it's a class thing y'see! Anyone who played through *Beneath a*

Steel Sky will know how claustrophobic adventures can be when you appear to walk to every destination just off the edge of the screen.

Thankfully, *Gene Machine* isn't fussy about which order you solve the many puzzles. This keeps the game from having a linear feel, but at the same time occasionally leaves you at a loose end over what you need to do next. You've a pocket full of business cards, trinkets, money and the like but can't do anything with them. Try and give the wrong object to the wrong person and it's, "Why would I want to do that?" or "I want to hang on to as many of my possessions as I can." No room for error, because the game won't let you make mistakes. You end up watching your percentage score to see if you've achieved anything. It's the same with the dialogue – you work through the options until you find the bit that lets you move on.

One of the finer features of the *Gene Machine* is the way that most locations are generously staffed with extras. Often they're just there to make up the numbers, adding a few stock sound bites, but there are dozens of characters you can interact with, getting

Mossop's unwilling to cushion the impact of the plummeting rocket, your next best choice is the professor's house.

Holding his breath, Fanshaw takes one small step for man, one astronomical step for anyone reckless enough to wear a goldfish bowl into outer space.

round the common failing in adventures – that everyone you meet is integral to the plot and so has to be listened too. Instead you'll just find yourself prodding some characters until they come up with something funny.

Brilliant backgrounds

What will strike you immediately about the Gene Machine is the quality of presentation. The backdrops are beautifully hand painted, with period colour schemes and stylings. The detailed sprites are super-imposed on them. Sure, you can see the join, but the animations are convincingly animated. One gripe about the character graphics is that they sometimes don't move quickly enough – for example every time you visit the Royal Institute you've got to plod up the stairs.

Secondly the animations are a tad too lively for their own good – particularly Piers' hand movements. Victorian mannerisms are all very well, but when he's in full flow, adjusting his cuffs, checking his pocket watch, straightening his clothes and whatever, he could almost be a party-goer at rave, dancing around in his white gloves like Ravey Davey Gravy.

Ultimately the reason why you should buy the Gene Machine is that it will make you laugh. Not as much as a boxed set of *Fawlty Towers* videos, but at least as much as *Sam & Max* or *Normality*. The wicked and yes, rude, sense of humour pervading in the

"Oh Mossop, you should have gone before we took off!"

game makes you want to push through to the end. You want to meet and greet the denizens of Victorian London and beyond, because you know for sure that if you provoke them in the right way then they're certain to say something to induce a cackle. In the last few months of the game's development comedy script writing duo Mike Lapine and Mark Leigh were wheeled in to funny-up the script with top results. The interaction between gentleman Piers and manservant Mossop, and the anachronistic cameos are straight out of *Black Adder*. What higher accolade does a game need? *(JB)*

A comic masterpiece you'll feel compelled to play through.

PC REVIEW VERDICT

8

Ultimately the reason why you should buy the Gene Machine is that it will make you laugh.

Running rings around Mirabella Your fiancée's ring is far too precious to leave on her capricous fingers.

First, you need to get some grease on your hankerchief from this labourer.

Piers pilfers a catnip plant, obscured by Mossop's excesses.

Experiment 73, dazed and confused on a catnip trip.

While the cat naps, Piers and Mossop grab the mouse.

Marabella's drinks tea from a teacup greased up by Piers. Then he lets the mouse loose.

In the chaos, the engagement ring slips loose - we'll see about the marriage later!

Battling it out with the first end-of-level boss, Zed. Sadly the combat involves simple shooting.

The Judge has delivered his instant form of justice to a baddie.

In Judge Dredd blatantly open doorways can only be accessed if there's a flashing sign reading 'In' hanging in the air above them.

JUDGE DREDD

After the disappointing movie comes the very questionable platform game. Welcome to a game licence the way they used to make 'em.

Dredd first appeared in the late 70s in Britain's *2000AD* comic, enjoying over a decade of credibility before Stallone and a botched script completely failed to bring the fascist law enforcer to the big screen in style. At least the movie looked the part, which is more than can be said for this particularly pathetic and outdated spin-off.

The game design, if you will, involves guiding Dredd around a dozen or so levels, split into a couple of sub-areas, with various primary and secondary objectives to complete. These include arresting criminals, blowing up arms caches, closing security doors, collecting weapons, and tracking down evil half-brother Rico. Adhering firmly to the platform-game-with-licence blueprint, players also get to run, duck, shoot, climb, jump, and collect power-ups. It's all the sort of stuff that's been seen countless times in the last few years. Indeed, the quality of the graphics and pre-

Dredd has a good wrestle with yet another man in a mac.

sentation suggests *Judge Dredd* belongs to another time. And it ain't the future.

Such retro gameplay and graphics would be fine were *Dredd* fun to play. It isn't. In fact, it's a lot less fun to play than Ocean's similarly themed *Robocop*, released on the Amiga four years ago. And it looks worse, too. It is, frankly, no fun at all. It's two redeeming features are that the main character at least looks the part, and that the levels follow the film plot.

Everything else – awkward jumping, dumb bad guys, inaccurate controls, bad level designs (it's possible to get stranded in various areas), infuriating combat, the pixel-perfect precision needed to use ropes and laughable intro screens – should have stayed right on the drawing board.

Sure, *Judge Dredd* is a game based on crime. But the crime here is the fact that anybody could entertain the very idea of dumping this sort of ill-conceived platform rubbish in this day and age. The crime is attempting to pass off a game design that's well past its sell-by-date purely on the back of a movie licence. And the crime is utterly failing to do current PC technology any justice, failing to include any sort of style or substance, and failing to remember such concepts as playability. Quite why anybody thought gamers would wish to trudge around blocky environments, taking potshots at badly drawn, zero intelligence opponents, while admiring the glitchy scrolling (on a high end Pentium, mind you) is beyond comprehension.

This is the sort of crime that would provoke swift retribution in the world of Mega City One. It shouldn't go unpunished in this one, either. *(MR)*

PC REViEW VERDICT

Judge Dredd? Drudge Dredd, more like. A reminder of how far games have progressed.

2

SHADY CHARACTERS

The one neat bit of presentation in Judge Dredd is this collection of rendered animations, used to depict the admittedly large range of criminal types. Even Judge Death and the ABC Warrior get a look in.

STAIRWAY TO HEAVEN?

It's remarkable, given LucasArts usual approach to things, that there aren't any postmodern cultural references in the game (ie. cheesy puns and gags lifted from songs, movies and TV shows about the life hereafter). So, there's no Stairway To Heaven, no Highway To Hell (you'd have thought AC/DC would have been a winner with programmers everywhere), no Heaven Can Wait/A Matter Of Life And Death style celestial bureaucracy no references whatsoever to possibly the greatest British movie about dead bikers ever made by Hammer in the 1970s, Psychomania. Y'know, the one where the Hells Angels all commit suicide and come back to haunt the one who couldn't bring himself to do it. Go on, you must remember.

The abstract game world of Afterlife is a little hard to get your head around at first so you'll need to play the tutorial first.

Keep a track of your saints and sinners on this table. Although, there aren't any sinners yet as Hell has yet to be developed.

Zoom out as far as you can and you can see the tiny planet from which all the good and bad souls have been transported from.

Afterlife

Balance Good and Evil for an eternity in LucasArts' first effort at the God game genre. Could the results be diabolical...

It's business as usual for LucasArts. Find something that someone else has already done fairly well, storm in, give it some of that special West Coast spin and collect the plaudits as everyone hails them as one the greatest game developers in the world. And with some justification. Who could argue with a track record that boasts *Maniac Mansion*, the *Indiana Jones* games,

Sam & Max Hit The Road and *X-Wing* and *TiE Fighter*? In a business which churns out uninspired clones and rip-offs by the bucketload, only LucasArts consistently produces fresh, exciting and hugely playable new twists on existing genres.

Which only makes *Afterlife* all the more disappointing. It doesn't take a genius to guess that *Afterlife* takes its inspiration from

Maxis' phenomenally successful *Sim City 2000*. The scenario, however, couldn't be more different. You control the afterlife of the title and must house all the souls who are entering the twin planes of Heaven and Hell. The souls must be rewarded or punished for eternity which means you have to create zones of the seven deadly sins or the seven heavenly rewards for them to move into.

Your supernatural majesty takes control

Clicking on these different coloured boxes will enable you to create zones of the seven deadly sins or heavenly rewards.

Going from left to right these four tools let you: build a gate, make roads, make a reincarnation thingy and lay a path to the reincarnation centre.

From here, all the rest of the buildings to flesh out the afterworld can be accessed. Ports, banks, colleges, utopias and things which are just like the Arcologies from Sim City 2000 but obviously aren't anything whatsoever to do with them. At all. Obviously.

A training college for angels. Hell has a similar training facility for junior devils and demons.

A bank. Quite how concepts of money, mortgages etc got in here isn't clear.

These are areas of zoning where souls can live.

The Gates. Either pearly or hope sapping.

Dull yet functional and really rather useful map controls. Flip it around 90 degrees, take a look at the 'planet' of heaven and hell in all its glory and zoom in or out for either fun or profit.

More essential, informative but not exactly inspiring data on angels and demons can be sourced from this set of buttons.

Get advice from Jasper and Aria by clicking on their mugs and then on your individual structures with the magnifying glass.

Plot the long term success of your domains by perusing the detailed graphs, tables and charts to see what your souls are up to.

A selection of eternal watering holes. Each individual building in Afterlife is available in both a good and evil version.

An early look at Hell. The bad souls seem to prefer a wobbly, messy road layout whereas the good souls stick to the straight and narrow.

A close-up of the Riddler-esque skyscraper favoured by uptown angels. Here, you can find out the population of the building, the Heavenly Hindsight Habitat, a reward for good souls. With 35,821 souls fighting for space in there, it's getting crowded so better keep them happy.

THIS GAME IS EVIL

Be warned that Afterlife takes a sacrilegiously amoral view of the pleasures and punishments we have awaiting us once we've sprung our mortal coils. Apart from a few cosmetic differences, Heaven and Hell are exactly the same. LucasArts laugh like goat-slaughtering pagans in the face of several thousand years of belief, dance naked in the woods at midnight around any notions of sin, and toast young virgins over the dying flames of decency left in the wood. We've always been told that computer games were the evil work of Beelzebub but now the proof is here! Come to think of it, doesn't George Lucas have a very pointy beard? And did you know that Star Wars is an anagram of Satan's Warts? (If you take away some letters and add some more, which, of course, any devious Satanist would do.) The truth is out there. Gibber.

Each soul can only move into a certain zone – fail to supply enough of the right zones and you'll have lost souls wandering all over the place and you'll start to lose money.

Divine intervention
Before your souls can arrive, though, you've got to construct a gate from the previous world and roads for them to go down. Once they're in and happily settled in whichever zone they want, things start getting a little more complicated. Heaven and Hell, it would seem, have just as many problems as any potential metropolis. You'll need to build colleges to train a workforce of angels and demons, limbo bars to keep wandering souls happy, huge special reward structures to entertain the millions of souls in the two planes and even banks.

Now, regardless of which religion you follow, when you play this you can't help feeling that the Heaven and Hell in Afterlife have been somewhat clumsily designed to fit in with the Sim City 2000 template. The detailed, zoomable isometric 3D view of the game world is pure Sim City 2000 but the similarities don't end there. A lot of the infrastructure of the afterlife – silly disasters, zoning, giant city blocks (arcologies, anyone?) – is clearly derived from the Maxis opus. This wouldn't be such a bad thing if the game actually brought something new to the genre as well… but it just doesn't.

Double trouble
The twin planes of Heaven and Hell should have given Afterlife the edge it needed but all they really do is double the workload and slow things down as you keep track of two worlds instead of one. The connections between the two planes don't affect the game all that much in practice – it's possible to spend all your time developing one plane and leave the other alone without any real difficulty. Everything works the same way in Heaven and Hell, only the graphics and names change which only adds to the feeling of tedious duplication.

You really are led by the nose in the game. It's almost as if you have to wilfully ignore the pointers offered to fail. If you haven't built enough of a particular type of zone, lost souls wander the streets. You just have to plonk down whatever coloured zone they need. There don't to be any geographical limitations either. You can stick stuff wherever you like without any comeback. Consulting Jasper and Aria, the diabolic-angelic team who act as advisors, makes the whole game even more straightforward.

That's the essential problem with Afterlife. It plays too simply. Oh sure, there's lots of things to twiddle but basically there's only one way to play the game right. What's more, the game lacks that crucial feeling of omnipotence all God games need. Sim City

2000 had the "What if…?" factor. It convinced you that you were really running a metropolis and you cared about your populace. In Afterlife, the deliberately silly game world with its arbitrary rules doesn't give you any feeling of achievement and you certainly don't want to show off a healthy Heaven and Hell the same way you would a thriving Sim City 2000 conurbation.

Lust for Afterlife?
Afterlife isn't exactly a dreadful strategy game but the LucasArts connection did get the hopes up for something special. Graphically, it's pretty and inventive, and the engine works well. There are a few laughs here and there but ultimately the gameplay just doesn't do enough. You can't really experiment and make different sorts of world which is the only thing that keeps you playing God games – even the benchmark Sim City 2000 – after you've mastered the basics of world-building. A rare misfire from LucasArts which shows that even the best can be average once in a while. **(CB)**

Open the gates and the new souls will sweep into Heaven, rushing straight for their own particular zone, settling down for an eternity.

The Disco Inferno – a giant dancing demon in a Travolta suit – is just of the hilarious disasters that can wipe out all your hard work.

PC REVIEW VERDICT
LucasArts squeeze some none-too-great ideas into a functional Sim City 2000-alike engine.

6

STARFIGHTER 3000

A great deal of emphasis is place on docking with the mothership in StarFighter 3000.

Telstar's latest offering sticks a rocket into the cosy world of flight sims, jettisoning waypoints out the window.

Load up *StarFighter 3000* for a glorious landscape of rolling hills and undulating seas, crisscrossing fuel pipes, SAM sites and tower blocks. Ignite the sky with purple and pink laser fire, punch your way through buildings, take down enemy fighters with a posse of air-to-air missiles. The emphasis in this flyer is clearly on excitement, not planning your optimal fuelling strategy.

The year is 3037. Peace still eludes the human race, and we are dominated by FedNet. You, citizen, have been unlucky enough to receive a poor quality photocopy from some nameless FedNet bureaucrat suggesting that you sign up with the Space Corps. Well, if there's to be a war in the galaxy, do you want to be waster or wasted? Blowing up disobedient colonists with a Predator Mark IV planetary assault vehicle is obviously going to be a lot more fun than siding with the rebels and taking potshots at passing stratoliners with an antique bolt action rifle. You don't deliberate for too long.

And once the plot's provided a break between Installation and Game Controls in the player manual, you can forget all about it and start shooting.

Carve yourself a canyon
The best thing about *StarFighter 3000* is that you can destroy entire mountains. Telstar clearly looked at the processor power needed to create today's texture-mapped landscapes and decided to get its money's worth. The result is a modest revolution. The oldest quick exit in a pilot's repertoire – death by sharp left into cliff wall – here becomes an opportunity to blast through metres of granite, carving yourself a canyon. You know the bit in *The Return of the Jedi*, where Han Solo pilots the Millennium Falcon through the twisting innards of the Death Star Mark II? That's you, that is. Except, unlike that wuss Solo, you're always just a laser shot from the end of road.

Shouldn't be allowed in a flight sim? Good. *StarFighter 3000* isn't a flight sim, it's a

shoot-'em-up bolted on to the side of a 3D flight engine. The result is a game with a totally fresh feel. It's not that the game looks or sounds unique (the effect of valleys and structures emerging from the fog is straight from *Magic Carpet*), but that it plays differently. You're dropped straight from your mothership into hostile airspace, and every bridge, tower block and hill is a target. Destroying these releases energy crystals that boost your vehicle's capabilities. The cherry-coloured triangles confirm the game's homage to the old coin-op *Space Harrier*.

The order in which you collect the crystals determines the improvements made to your Predator. A couple of combinations get you started, but hitting on new crystal recipes is largely a matter of trial and error. Power-ups range from increasing your ship's shield strength and missiles, to upgrading its laser systems and adding extra weapon mounts. You won't hanker after a megaship. The crystal combinations are bewildering, but before long you're hand-picking your

The voice-over sounds like one of those cheesy 'Remember, the Slurpmaster is only available by mail order' TV ads.

The pipes that criss-cross the early levels make tempting targets.
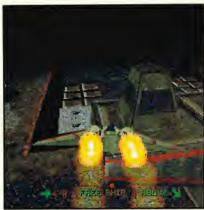
Blow up a section of pipe, and you're in the middle of a chain reaction.
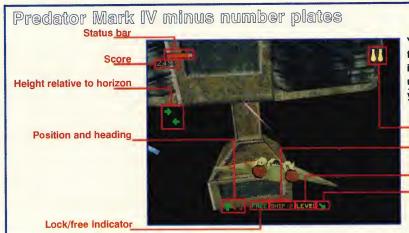
The devastation you can cause with a few well-aimed shots is impressive.

Exploding ships are spectacular, even here, in oxygen-deficient deep space.

Piloting your Predator Mark IV ain't like taking pot shots at swamp rats (thank heavens).

Predator Mark IV minus number plates

Status bar
Score
Height relative to horizon
Position and heading
Lock/free indicator

Your Predator was built for speed – its dashboard is an exercise in pure minimalism, to make your task easier.

Lives
Target number
Target elevation
Target direction

You're under orders from FedNet to show no mercy, so if it moves, shoot it. If it doesn't move you might want to shoot it regardless – you can always use the extra crystals to power-up.

The wide variety of terrain might not affect the fighting, but it's far easier on the eyes.

way through the power-ups like a granny chasing the reduced bargains at Sainsburys.

When you first start playing, things are a little disorientating. There's no head-up display, there isn't an altimeter, and as for velocity, the best you can do is guess. Equally, your battle map tends to confuse more than enlighten. There's a whole set of icons to decipher, and to make matters worse, the miniature version of your aircraft always points north. There's no sampled speech from your comrades in wings, just quick text messages. Your rookie wingmen

tend to say confusing things like 'going into defensive formation' before hurtling past you into a swarm of fast-firing enemies. Some problems evaporate with play (for instance, locking on to targets and navigating towards them is so simple it's confusing) but the overall shoddiness undermines the game.

The graphics get the job done, with the occasional nice touch. When you destroy the middle of a tower, for instance, it collapses from the centre out, with chunks of the top crashing into the bottom. Similarly, the pre-rendered sequences are functional, and

you'll probably skip them. It's worth watching the introduction to the FedNet universe – the voice-over sounds like a cheesy 'Remember, the Slurpmaster is only available by mail order' TV ad. The result is something like: 'The Predator Mark IV has wings, enabling you to travel above the ground'.

StarFighter 3000 isn't a classic, but it's good fun. It can be addictive, especially once you suss out the crystals and first fly with your wingmen. Comparisons with *Terminal Velocity* or *Fury* are inevitable, but this is a far superior shoot-'em-up. *(OB)*

PC REViEW VERDICT

Innovative and exciting game-play – you can even shoot the hills. Slightly rough around the edges.

8
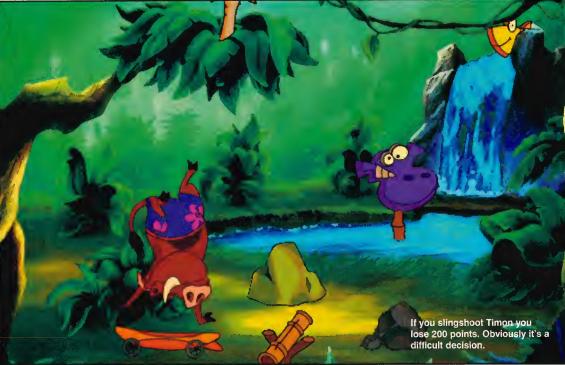
A passing stratoliner waiting to be blasted. Use your air-to-air missiles for this one.

The stratoliner flashes green, indicating that the missile is locked on target.

The enemy makes a futile, laughable attempt to survive, but the Predator will triumph.

Bug drop. The red bug's connected to the red bug. The blue bug's connected to the…

Jungle Pinball is amusing for a while, but only goes to prove that pinball belongs in the pub.

If you slingshoot Timon you lose 200 points. Obviously it's a difficult decision.

TIMON AND PUMBA'S
JUNGLE GAMES

There's a unique synergy between meerkats and warthogs, and now Disney brings you the game to exploit it.

Jungle Games features Timon and Pumbaa, two stars from the *Lion King*, in a selection of arcade clones and animated skits. Although the wrinkliest adolescent will enjoy the slapstick banter, Disney's main market will be the discerning five-year-old.

Anyway, roll up for Hippo Hop, Slingshooter, Jungle Pinball, Bug Drop and Burper. All are gaming stalwarts, remixed to a jungle beat. Hippo Hop is a *Frogger* clone – you try to cross the river without touching the water. It looks pretty but plays awkwardly. You run along a hippo's back and try to leap sideways onto another, but you miss and get soaked. It's difficult to build up a rhythm, and the key to successful simple games is losing yourself in a mantra of repeated moves.

Slingshooter is more successful. You simply point your cross-hair at the bad guys and let loose with your berries. Soon the shooting gallery is chock full of skateboarding warthogs and wooden parrots on sticks. Some targets seem invulnerable though, and the distinction between friends and enemies is difficult to discern.

Bug Drop is reminiscent of many games, most obviously *Puyo Puyo* on the SNES. It's a two player head-to-head where you try to match lines of coloured, pulsating bugs. Think *Tetris*, crossed with *Connect 4*. If your timing is right, you can set off chain reactions resulting in unmatchable coconuts falling on your opponents screen. It's addictive, especially against a human.

Burper has Pumbaa shooting at bugs with gastric bubbles. It's like those Game&Watch toys that everyone had at school and seems a good kiddie game, fun at first but ultimately stifling. It's just too dull, even for individuals who spend whole mornings walking down the high street shouting 'car!' every two steps.

Finally, Jungle Pinball proves again that ball-bearings belong in the real world. Pressing the space bar to nudge your screen will never rival hip- nudging a pinball machine, sending pints flying and drawing admiring glances from bearded men in leather jackets. On-screen there's no magic. A real life ball ricocheting from a neon toadstool into a roulette wheel demonstrates the beauty of physics in motion. On a computer, it's just a fun delay.

That's *Jungle Games*: two fun games, two mediocre ones and a poor one, plus plenty of lovely sketches that you'll watch once. Some surface appeal, but little long term interest. *(OB)*

DEVELOPER
Disney Interactive
PUBLISHER
Disney Interactive
CONTACT
0171 292 5272
PRICE
£39.99
MINIMUM SYSTEM
486DX, 8Mb RAM, double speed CD drive, Windows 3.1 or 95

Fun at first, with great animation, but the gameplay's strictly for the kids.

PC REVIEW VERDICT

6

Pumbaa wouldn't hurt a fly, but he'll burp at bugs.

Hippo Hop is let down by an unforgiving control system.

Sensible World of Soccer European Championship Edition

The functional in-game graphics desperately need updating, but gameplay still tops the league.

8 PC REVIEW VERDICT

SWOS has been around for longer than the home computer. Okay, that's an exaggeration, but even the briefest glance at this new Euro cash-cow confirms its classical ancestry. Pitting its graphics against the likes of Euro 96 or FIFA International Soccer is analogous with comparing Subutteo with 90 minutes at Wembley. But like Peter Beardsley, the beauty of SWOS is more than skin deep. It's in the way it plays the game.

The gameplay is glorious and the emphasis is on enjoying your soccer. Shots, passes, headers and the rest are all controlled by just the one fire button. For instance, pressing fire and quickly pulling the joystick back and right causes the ball to sail up the pitch, veering right. It's perfect.

Certain rivals have felt forced to over-complicate their own control methods just to offer something different.

This Euro incarnation of Sensible Soccer also includes a comprehensive management simulation. There's even a 20 year career option, where you aim to lead your national team to glory, or to vegetable-hood, on the back pages of the tabloids. With an international transfer market enabling you to pluck the best Moroccan midfield talent, and the greatest tactics designer of all time, the European Edition respectably exhumes Sensible Soccer for perhaps the last time. (OB)

Gary Neville reacts swiftly to the Dutch threat by waving to his mum.

Shearer watches his shot scream past the 2cm high Dutch goalkeeper.

Onside

The PC footie field is jam-packed these days, and Onside is just competent midfield padding.

7 PC REVIEW VERDICT

Things start well in this player/manager game with an attractive rolling demo of the

Officers, arrest the Onside cameraman! He's so drunk he can't even hold the camera straight.

pre-game crowd setting the scene. Unfortunately, the game itself can't quite live up to the packaging.

Your blocky players run out onto a jittery green turf. Both fire buttons control the ball, with different combinations for shooting, chipping and so on. But passing isn't critical in Onside anyway since it's fairly easy to run the ball all the way out of defence and score. Where Kick Off 96 suffers from impossible dribbling, Onside goes to the other extreme. Every player is a Pele or a Gascoigne.

Meanwhile, in the offices of management, you're likely to feel impotent unless you actually take part in the matches. Unlike the best management sims, you don't feel that there's much you can do as a pure coach once your lads have started to lose.

You might buy new talent or schedule a frankly laughable penalty training session, or you can get fired as the boss of Manchester United after 12 straight losses. (OB)

Players running purposefully about in Onside. The game suffers from its blocky graphics, although the pace of play is commendably fast.

Kick Off 96

It can't play, it sounds bad and its looks are nothing very special.

4 PC REVIEW VERDICT

Oh dear. Kick Off, in its many incarnations, never was the easiest game to play. Yet from the first touch you felt the gameplay was worth persevering with. It was frantic yet cohesive, and the unique lack of 'ball glue' meant that dribbling and passing required you to constantly switch left and right to

retrieve the ball. Kick Off 96 retains this control method, but it has lost the vital playability. Perhaps the games testers at Anco have actually mutated, and their new motor-neuron systems are now full optimised for this infuriatingly awkward football game. While this might well enable them to beat Manchester United after just a few hours of practise, we dread to think what happens

when they attempt to use the gents.
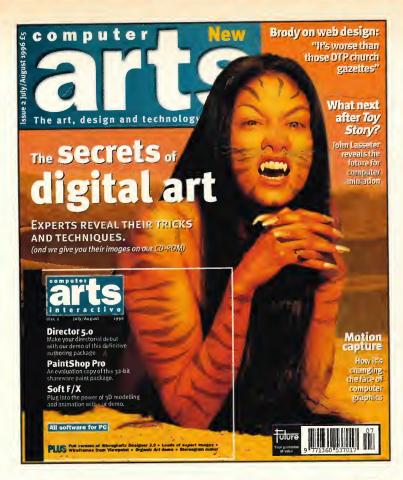
The rest of us will find the game irritating in the extreme. The sampled stranger they've paid to shout 'Goal' when the PC knocks another past you is the final slap in the face. It's possible that after a few days in a dark room you might get the hang of Kick Off 96, but when there's top players like SWOS out there, why bother? (OB)

The graphics in Kick Off 96 are clean, but a little too anti-septic.

A dozen balls spring from your midriff when you make a throw-in in Kick Off 96.

'Goal!' adds the commentator helpfully, every time the computer scores. 'Goal!' Just 'Goal!'

The two player games are where the long lasting fun really lies.

A death-defying sortie in the 'copter has reveals the location of the enemy flag. Getting the jeep to it and back to base again could prove trickier.

It looks like an 80s leftover, but plays like a gun-fetishists dream. Return Fire is proof positive that violence is golden.

MAPPING IT OUT

Most of the levels in Return Fire are your standard atoll teaming with enemy firepower. One or two look might look a little familiar, though...

RETURN FIRE

You will send enemy aircraft crashing down to a watery grave. Fuel silos will combust with awesome ferocity, and the opposition's barracks will be crushed. You will destroy buildings – just so your tank can take a short cut. And you will hunt down helpless soldiers as they make a bid for freedom, laughing as you trample them beneath several hundred tons of steel. You will set whole islands ablaze, oh yes. And as the forces of chaos run amok, you can feel safe in the knowledge that *Return Fire* is the sort of game which is a complete stranger to culture and diversity.

This is the game 3D0 owners have been crowing about for so long – mainly because it's one of the few decent games on that console. Bizarrely it seems PC owners have

been missing out, for *Return Fire* is one of the freshest, downright immediate combat games ever to send shrapnel across a computer screen. It's seems war is good for something after all.

Kill, dodge, kill, get down

In truth there's very little original about *Return Fire*. Many of the concepts have been seen before, just not all in the same place. The most obvious reference point is the *Desert Strike* series, but then *Return Fire* features far groovier visuals, and the addition of three essential vehicles besides the 'copter instantly opens the gameplay right up. In reality the game owes a lot to those old Atari VCS combat games. This is a game of kill, dodge and kill again when it comes

down to it. What initially marks *Return Fire* out for special attention is the occasionally dizzying 3D system used – an essentially sprite-based affair, but one which not only offers smooth scrolling over the terrain, but also pans in and out, up and down to frame the action as well as possible. The result isn't exactly cinematic, but it's exhilarating all the same. The way the camera pulls back and up as a player sets a jeep bouncing over the ground is something else.

The game features 100 different level maps, which slowly raise the danger factor as the player gets familiar with new types of enemy vehicles, begins to understand the role each of the four vehicles and gets a feel for the strategies. Cruising round in the helicopter is great fun, but it's not the

You will hunt down helpless soldiers as they make a bid for freedom, laughing as you trample them beneath several tons of steel.

Not only is it possible to flatten soldiers on the run, but you can also drive over their tents, leaving a sticky mess behind.

Split screen view. The computer controlled gun emplacements offer some defence while you try to find the enemy flag in your chopper.

The moving camera can occasionally induce sea sickness.

It tends to swoop to strange angles like here.

sort of vehicle with which to get into a fight with the numerous gun emplacements. Far better to send the in the heavy ground artillery. Which introduces the problems of navigation, of course. From these humble beginnings a deceptively complex game design emerges. It's nine tenths bluster and bombshells, for sure. But the juggling of airborne and ground-based vehicles, the various level designs – all island and atoll based, and the varying kinds of enemy forces all make for tricky, ever changing challenge.

The cam swings into an overhead view for the death sequences. Pass the sickbag.

Bring home the flag

The thing is, it's not all kill, kill, kill round here. Well, alright, it is. But there is an objective on each level, namely to capture the enemy flag and bring it home to the base. Naturally, this is a lot easier said than done as the flags can only be collected using the near defenceless jeep. So a pattern sets in, kicking off with air reconnaissance, followed by heavy fire, then a quick run in the jeep to polish off the level. Marvelously simple, but challenging stuff.

And then there's the presentation aspect of it all, and a design which isn't just user-friendly, it's actually got the hots for the unsuspecting gamer. The visuals may look a bit crummy, but that roving camera view provides a feast for the eyes. Add the excellent explosions, the way scenery can be reduced to rubble and the little soldiers who run about trying to save themselves, and you've got a game with surprising visual subtlety. Sound and music is where it's really at, though. A bunch of classical themes have been incorporated, from *Flight Of The Bumblebee* whenever the jeep is taken for a spin, to the Hallelujah choruses which accompany the discovery of the enemy flag. Best of all though, is the way *Ride Of The Valkyrie* blasts out whenever the 'copter takes to the skies. Fans of a certain Vietnam War film will be delighted. Even the sound of gunfire and countless explosions is tastefully handled – the Dolby enhanced samples sounding crisper than in any other game around. And of course there's the split-screen two player mode. Which is where the fun really begins…

The two player matches the solo game design, in that there are nine basic levels each with a variable number of maps to play over. The difference is that this time players must attempt to capture the enemy flag while defending their own. Sure, there are computer-controlled defences in the form of gun turrets, but it takes more than that to stop a determined human opponent. Just watching two gamers scrabbling to get the right vehicle out of their base and into the warzone is hilarious. The carnage that ensues is even better.

Lacks longevity

The downside to *Return Fire*'s simplicity is, of course, a very limited lifespan. There are only so many times even the most blood-thirsty will want to roam around samey landscapes blowing everything to Hell and back. The rotational control system makes joystick control a right pain, too – rather frustrating in situations where accuracy is the key to survival, or on land where it's all too easy to get lodged between bits of scenery. But *Return Fire* also features some of the most fluid arcade action the PC has played host to. What with its Dolby Stereo sound, that ever-panning camera view and enough explosions to blow the planet up several times over, it's a game which possesses the true grit of a classic. Ready for that apocalypse now? *(MR)*

PC REVIEW VERDICT

If you love the smell of napalm in the morning then you'll love Return Fire.

8

Trains and boats and planes

Okay, so there aren't any trains. Or boats, for that matter. Or planes. But there is a helicopter and three types of ground vehicle. Here's your whistlestop guide to them.

The helicopter – equipped with two rocket types but little armour. It's mainly for locating the flag.

The jeep – a doddle to blow up, it's only equipped with eight grenades. It's vital for recovering the enemy flag.

The tank – big, bulky and pretty well armored. It's a surprisingly nippy vehicle, but the firepower isn't that impressive.

The armoured missile carrier – slow to get there, sure to blow it up when it finally does. A real workhorse of a vehicle.

This muscley bunch can take on anything Toshinden has to throw at them. Even their hair is rock hard.

Virtua Fighter
Remix

Sega's flagship beat-'em-up comes to the PC for a second bout, this time without the need for a video accelerator.

It's not supposed to be this way. The unwritten rule is that games carrying this amount of hoopla around with them are never all they're cracked up to be. And then there's the fact that PCs just can't do what consoles are capable of, despite costing five times as much. And yet here's *Virtua Fighter* PC – so much more than just another beat-'em-up, and far more impressive than anyone had any right to expect.

There's already been a PC version of *Virtua*, but last time round only users of the Diamond Edge could get in on the act. With that card looking an unlikely proposition, it's only natural Sega should come up with this, a speedier interpretation which relies on decent coding and processing power rather than an extra board to shift its amazing polygonal characters around.

A blend of the original *Virtua Fighter* and *VF Remix*, this one includes numerous graphics options to switch off the textures (original *VF* style) as well as a low resolution option for the truly humble machines. But it's when a beefy Pentium gets its data channels on the fully textured version that the gymnastic combat techniques really shine, producing the most dazzling images yet seen in a PC game.

The thing is, as wonderful as the characters look, they prove to be more than mere eye candy. Because they inhabit a 3D space there's a precision offered which the *Mortal Kombat*s and *Street Fighter*s just can't offer. The fighters here grapple, punch, kick and block with real accuracy, and the relative positions between the combatants is just as crucial as the choice and timing of a move. And boy, what moves there are. Even the standard array of attacks are beautifully fluid, while actions like backflips, flying kicks, and knee drops are poetry in motion. Remarkably violent poetry, obviously.

The trick with martial arts games is to make the special moves accessible without being too easy to perform, to build just the right learning curve into the control system, in other words. Thanks to its coin-op pedigree this is something *Virtua Fighter* does better than any of the competition. In fact it does pretty much everything better than the rest. Granted the polygons occasionally stick out where they're not supposed to. And the lack of any weapons makes this superficially less spectacular than *Toshinden*. But *Virtua* wins every time in terms of sheer playability, no question.

It's strange that Sega, of all people, should be responsible for the PC's crowning glory. But irony or not, there's no getting away from the fact that *Virtua Fighter* tweaks the nipples of *Toshinden* and kicks the arse of every other fighting game out there. So there, punk. *(MR)*

DEVELOPER
Sega
PUBLISHER
Sega
CONTACT
0181 395 3399
PRICE
£39.99
MINIMUM SYSTEM
486/33, 8Mb RAM, 60Mb hard disk space, double speed CD-ROM drive, Windows 95, soundcard, joysticks optional

VF is probably the most impressove PC beat-'em up ever. A game of legend.

No weapons but plenty of kicking action and bare knuckle fighting.

A goo... ...cial m... ... at this stage could ... the b...

PC REVIEW VERDICT

9

PRAY FOR DEATH

...but he makes enough of a comeback to finish Wolfrich off. Very Mortal Kombat.

Murgan discovers it's not always the devils who fight dirtiest in a typically lurid scene from Pray For Death...

CD REViEW
You'll find a fully playable demo on our disc.

A side-on, non-licensed beat-'em-up in this day and age? Virgin's Italian-sourced stallion has a few tricks of its own up its streetfighting sleeves.

Two words: *Killer Instinct*. There, that's the glaringly obvious reference point out of the way. For the gamer who doesn't inhabit that shady land where coin-op arcade games rule, *Killer Instinct* is an old school beat-'em-up, designed by Rare for Nintendo, dressed up to look like a thoroughly modern martial arts fest. Mountains of shiny pre-rendered animations are used to bring odd fighting characters to life in matches which are always packed with explosive effects and complemented by lovingly detailed backdrops.

The only problem with *Killer Instinct* is that behind all the attention grabbing noise, it's just another *Street Fighter* or *Mortal Kombat* game, lacking the fashionable 3D of *Virtua Fighter* et al. And so it is with *Pray For Death* – if nothing else, then surely the most beautiful of the 2D beat-'em-ups on the PC.

Obviously what will draw many to *Pray For Death* is the outrageously masterful graphical effects. Not only does this game power along on the most humble of machines, it does so while scaling the action in and out, producing shadows and coloured light effects, moving the whole background around with a real 3D parallaxing effect. On some levels it even adds water ripples, reflections and splashes. Add this little lot to the transparency effects, the washes of

blood, screenfulls of sparks and fighting characters who strut their 400 frames of animation while filling huge portions of the screen, and it's hard not to believe that PC graphics really have come of age. Only the bittiness of the low res VGA mode lets things down, but even this is negligible when the thing is in motion, which is most of the time.

With such a feast for the eyes it would have been all too easy to toss outmoded concepts like playability aside, but *Pray For Death* isn't one to do things by half. *Rise Of The Robots* this ain't. Consequently, it plays as mean as it looks, with ten larger than life – almost larger than the screen – characters, each with fluid controls, a whole bunch of special and hidden moves, and just enough personality to get players relating to them. The size and animation bias of the fighters does restrict the action to close-up brawling,

however. The sense of space and poise of *Street Fighter 2* bouts is sadly lacking. But that's pretty much the only cause for complaint, aside from the fact that real 3D beat-'em-ups are beginning to make these side-on efforts appear just a little dated, despite all the graphical treats. Top marks for the level of user control, though – from the numerous solo, dual and multi-player game options to the graphical cut-backs for less powerful machines. And all this for 20 quid.

Had *Pray For Death* been released a year ago, there'd be no doubt about it getting a rapturous reception. As it is, side-on beat-'em-ups are less that fashionable right now, particularly those without a coin-op pedigree. That said, every self-respecting PC owner really ought to check it out. It really is the most frenetic old school martial arts game around. **(MR)**

KILL AND KILL AGAIN

The key to winning is mastery of the special moves.

Here Painbringer unleashes his Electro Death special.

Then squashes Xenobius into a bloody pulp. Splat.

PUT A *TIGER* IN YOUR PC

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PCANSWERS

Get the best from your PC and Win95   Issue 30 **August 1996**   (Also available with HD disk) **CD-ROM** edition ⊙

Far too many teeth, the sort of brains which are only geared towards killing, and some very bad breath. It's not likely he eats with chopsticks.

Space Hulk

Games Workshop's successful sci-fi based role-playing war machine takes the battle to the PC for the second time – with blood-curdling effect.

Uriel watches on as one of his compatriats wastes a gene stealer.

If an alien gets hold of a soldier's suit the only hope is to fry him.

The humans torch another room – taking care not to blow themselves up too.

The real work is actually done one this troop command screen.

It may lack the finesse of Doom, but it's a winner when it comes to blood.

A lready a successful role-playing wargame and the subject of one PC game, *Space Hulk* is a weird mix – a medieval science fiction setting for countless claustrophobic close combat battles inside huge, ancient Space Hulk craft. Equipped with age old combat suits and a question- able range of weapons, the humans under player guidance must achieve their mission objective while battling with their enemies, the gene stealers. A truly frightening bunch, these psychotic creatures look like a cross between the monsters from *Alien* and the nasty breed found in the *Predator* films. Their habit for clawing right through hapless humans is remarkably similar, too.

A thoroughly modern blend of straight action and genuine strategy styles, the many solo or multi-player network missions (including deathmatch and co-operative modes) charge players with controlling any-

where between one and a dozen troops. It's possible to switch the view to any one troop, and to take direct control – but guiding just one bloke around by hand isn't going to get the good guys very far on most missions. Hence the strategy element, where orders can be given to the troops on a map screen, from which game time is frozen – albeit only for a limited amount of time. Orders can include simple movement, retreating, open- ing and closing doors, retrieving objects, or flaming designated rooms. Flaming features heavily in the mission objectives, though some just require switches to be set, while others are simply set the challenge of surviving for a few minutes.

Graphically *Space Hulk* is most effective – the tight corridors giving a suitably hemmed in feeling, while the strange mix of medieval and chrome settings lends the game a very moody air. The gene stealers

are the game's crowning glory however, sprinting through the corridors like things possessed, and getting so close as to fill the whole screen. Such moments are genuinely chilling as troops desperately try to fry the enemy before they can land a lethal blow – reducing the player's video signal to white noise, then nothing.

The lack of variation is disappointing, however. There are only so many things to do with a bunch of troops and a limited number of objectives, after all. Another problem is the way close-quarter combat is handled, making success a little too arbitrary at times. That said, the missions (and full campaign mode) provoke a tremendous desire to succeed, while the network games are a surefire way to lose friends and influence people.

Not quite the full-on deep space war experience, then. It's a little too limited and concerned with troops being in the right place at the right time for that. But *Space Hulk* is certainly up there as one of a new breed of hyper-slick games, where filmic scenes are par for the course, countless voice samples (all British, hurrah!) genuinely enhance the mood, and the action is peppered with a liberal helping of real strategy. One thing's for sure – Sigourney wouldn't last five minutes. *(MR)*

IN YER FACE!

Think you can cope with one of these buggers coming straight for you?

Can you think on your feet even when he's so close you feel his flesh-warmed breath.

And what do you do when he rattles your camera unit likes this? Think again.

ALIEN NATION
To find out more about the original Space Hulk role-playing game from Games Workshop, PC owners with Internet facilities should check out the Hulk home- page. Point your WWW browswer at: http://www.games- workshop.com/space- hulk/spacehulk.html

PC REViEW VERDICT

Tense and occasionally shocking, Space Hulk has areas of excellence but is limited in the long run.

7

RE-ISSUES

Clutch your pennies in your fist and join PC Review as we go hunting the best buys in budgetland.

Empire bolsters your bank balance

Shooting the space-station in Elite Plus brings a horde of Viper law enforcers (and your subsequent annihilation), just like in the old days.

Empire has announced a range of budget games, all on CD at £4.99. The range includes both single and double title disks. Topping the single title billing is *Elite Plus*. *Pacific Islands*, *Shadow President*, *Empire Soccer*, *Campaign One* and *Campaign Two* also jostle for recognition.

Magic Boy, with *Cool Croc Twins* and *Volsied* with *Pipemania* are the best of the double CDs. Others include *Twilight 2000* with *Space 1889* and *Mega Traveller I & II*.

A barren bar in Freddy Pharkas. Obviously the punters haven't yet heard they've been re-issued.

Air Bucks
Sierra Originals £9.99
It's 1946 and you've got $100,000 and a DC-3. From these humble beginnings are great airlines (hopefully) made. You have to negotiate landing sites, plan new routes, set prices for the various passenger classes on each flight, juggle with your marketing and, of course, buy ever more aircraft to keep up with demand. Statistics are provided for

every plane in your fleet enabling you to work out what's going wrong.

You can try all manner of techniques to get people into your planes. You might try the Branson approach – innovation and excellence, top quality in-flight meals and radios, and a big promotional budget. Alternatively you go for the bargain bucket customers, the kind of people who either can't or won't pay for the luxury of a trip free of gunfire, farmyard animals and American tourists. It's down to you. There are no frills visually, but that doesn't harm what is, basically, a competent strategy game.

Leisure Suit Larry 5
Sierra Originals £9.99
Welcome, yet again, to the lecherous world of Leisure Suite Larry. This time you play two characters, Larry and Patti, with each role punctuated by dreams and sleep. The game is divided into various episodes, and you'll take in radio stations, porn shops, airports and even FBI laboratories on your way.

As usual, Larry's adventure is basically one long point-and-click drive down the sleaze strip. Some of the scenes are definitely in poor taste and, when coupled

with the crass humour, you have to wonder who keeps buying these games? Definitely not sensible *PC Review* readers, that's for sure. They're much too well informed.
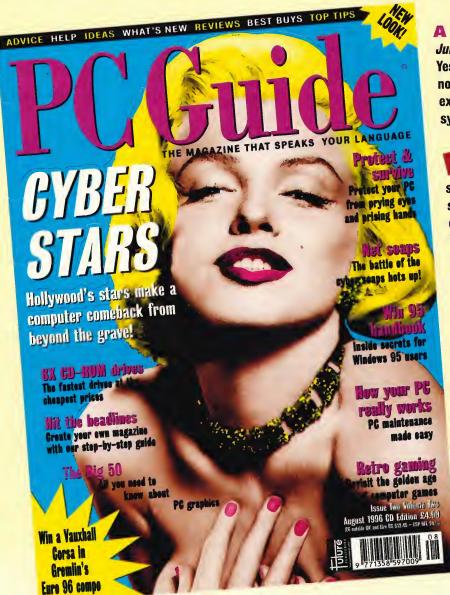
Freddy Pharkas – Frontier Pharmacist
Sierra Originals £9.99
This budget gag fest is from Al Lowe, the same comedian who spawned the endless *Leisure Suit Larry* series. This time you're in the Wild West as Freddy Pharkas, a failed gunslinger turned chemical dispenser. You might wish for an easier life now you've hung up your pistols but, of course, hope springs ephemeral. Aside from the puerile gags in every screen, you'll have to navigate some pretty taxing puzzles. Most of these involve manufacturing potent concoctions to cure your patients, which is where your Home Medical Advisor (1881 edition) will come in handy. An affinity for comedy routines involving sheep will also advance your cause.

If you like the kind of humour Freddy Pharkas slaps in your face, you'll be spending your tenner wisely. Beware though, you'll also have to fight against annoying sudden death and puzzles which sometimes require blind luck to solve. If subtler humour is your thing, however, the joke will be on you. **(OB)**

Guide Leisure Suit Larry through his fifth smutty adventure. Sorry, what were we thinking? We mean 'Don't bother guiding Leisure Suit Larry through his...'

THIS MONTH IN PC GUIDE

A STAR IS DRAWN

Jurassic Park? How very 1994. Disney's *Toy Story?* Yesterday's news. The big thing in Hollywood right now is the digital actor. He's big, he's bad and he exists only on a hard drive. *PC Guide* meets the new synthespians.

Plus SOAPS ON THE NET

Forget your thrice-weekly diet of TV soaps. You can now get your soap fixes 24 hours a day courtesy of the World Wide Web. If you want to keep up with the goings-on in *Coronation Street* or *EastEnders,* then this is the place to be. Read our exclusive story.

BURN TIME!

CD-ROM writers are the latest 'must-have' desktop accessory. As prices plummet, everyone wants to cut their own CDs. We review the cheapest drive yet!

ADOBE PHOTODELUXE

Now you can have your own digital darkroom on your desktop PC. Adobe's cut-price image manipulation package means your holiday snapshots can be transformed into works of art.

PC INSURANCE

Discover all you need to know about insuring your PC.

HIT THE HEADLINES

Create your own magazine with our in-depth tutorial and exclusive *PageMaker 6.0* demo.

ON THE COUCH

If you're new to computers, there's no denying that PCs can be difficult beasts to master. That's why the *PC Guide* team of experts is on hand to solve your worst computer nightmares. Whatever your problem, we've got the answer!

Extra Don't miss out on this month's CD-ROM. We're giving away *WinDelete 1.0* – the Windows uninstaller that gets rid of all unwanted files. It's a dream to use and it's yours for the price of the magazine.

ON SALE AT QUALITY NEWSAGENTS NOW

Let's see, what's in our jungle mix of tips this month? There's C&C Covert Operations, Bad Mojo, more Civilization II, Absolute Zero, Crusader No Remorse, Psychic Detective, Alone in the Dark 3 and more, more, more. Yes, it's another essential line-up from PC Review's tipmeisters.

PLAY TO WIN

If you want to get ahead, get PC Review's extensive and thorough Play to Win tips section. Every month a winner.

Command and Conquer: Covert Operations
(Not reviewed)

C&C is, as we're sure you already know, a brilliant game – that perfect mix of action and strategy. The one department that lets the side down however is the curious lack of cheats. There's lots and lots of tricks and strategies to adopt but no really pointless and stupid game alterations which are available at the push of a few magic keystrokes. Shame, that.

The good news is that this is something they've seen fit to change for the *C&C Covert Operations* mission disk. There is now a pointless and stupid cheat built into it which changes *C&C* into a bizarre *Jurassic Park*-inspired dinosaur hunt. To activate it change to your *C&C* directory. Type C&C FUNPARK then hit [Return]. That ought to do it. Have fun.

If blowing the living daylights out of lots of tiny tanks becomes mundane try the cheat opposite.

Surely you must own Command and Conquer? Surely? If not, why not?

Alone in the Dark 3
(Reviewed PCR53, Score: 9)

It's been around a while but when this cheat recently came to light we just couldn't help passing it on. *Alone in the Dark 3* can be a tricky game. Those cowboys can be terribly quick on the draw. This won't be a problem anymore if you follow the instructions below which will make Edward Carnby invincible and equip him with your choice of weapons.

First, play the game as normal and save your progress in save slot one. Now exit the game and type each of the following lines as the DOS prompt, pressing [Return] after each one.

```
DEBUG
NSAVE0.ITD
L

EAE64 00 40   For maximum health
EB0CE 00 40   For the .38 special
EB0C6 00 40   For the Winchester
EB1C0 00 40   For the Gatling Gun
EB16A 00 40   For the Shot Gun
EAE7A 00 40   Return from the dead
EB1EA 00 40   For the Colt
W
Q
```

Now resume your game and the cheats should take effect.

Civilization II
(PCR 54 Score: 9)

Despite being a superbly programmed piece of software, a curious loophole has come to light in *Civ II*, one which you can use to great advantage. It concerns the fact that whenever you foolishly change your mind about which unit to build, you lose half of the shields you accumulated towards it. A painful and some would say unnecessary burden. Well, not any more.

To chop and change units under construction as often as you like without picking up this penalty, set the choice of unit to Auto and let the advisor decide which unit to build, depending upon what type of unit you desire. Now switch Auto off and click Okay this without changing the unit. Wait a turn then you can change this unit under construction to whatever you fancy without any loss of shields.

Civilization II can be a tricky affair at the best of times. Need some help? Well this tip should lighten your load.

Absolute Zero
(Reviewed PCR53, Score: 6)

In order to review a game we here at *PC Review* play it continuously for days, putting it under the most rigorous testing known to man or beast. Occasionally, so that we may probe a game's later stages, we are told of a helpful shortcut so that we may access it without having to play through it. These are quite often taken out of the finished game. However, one or two still sneak in to the final product. Like this little gem, which apparently still resides within *Absolute Zero*.

From the main menu choose to start a new game. Now enter your name as Magazine Review, to let the game know that you aren't in fact a normal player but a games reviewer for one of the nation's finer PC magazines, like *PC Review* for example. Upon doing this all the names

We thought this was supposed to be a space-age shoot-'em-up? Looks more like a lorry park in Sunderland to us?

of all the levels will appear allowing you to pick and choose which you would like to play.

Psychic Detective
(Not reviewed)

Although a rather simple game, *Psychic Detective* can be quite good fun. And it's the only game we know where you can leave it running, visit the bookies, come back, make a cup of tea and return to find that you've completed the game. Oh! There are many endings available, only three of which are deemed as being correct. Here's how to achieve each of the proper endings.

1. When playing Black Diamond choose the four most powerful icons, which are Madame Tikunov, Monica, the Cigarette and any other icon except the skull. Max will take the four remaining. Now attack Max's icons with yours, being careful to use your strongest against his weakest. Win here to get the 'grand slam' ending.

2. Ready for successful solution number two? Okay then, stick your brain into neutral and do the following. When Moki lets you use his Collector do so, but don't jump into anyone's head. Max will appear. Use the Read Max's Psyche icon and stay inside his head until you're killed. Laina will find you and at the mansion let her into your head to discover that Max killed Segei and not Vladimir, rewarding you with the 'healing' ending.

3. Escape your body in jail by jumping into Laina's head. Now jump into the kid on the skateboard and then into Sylvia when you pass her in the limo. Stay with her for the limo scene then return to your head. At Mirage Quest, touch Laina's bracelet then choose to seduce Sylvia. When you're in her office select the seduce Sylvia icon again. Now, during the game of Black Diamond select Cigarette, Kite, Madame Tikunov and Sylvia to win the 'hothead' ending. May we apologise at this stage to anyone who hasn't played the game and doesn't know what the hell we are talking about.

Hey, you gonna play the game or what? Punk.

No. No. No. Not the moistened breadstick. No.

Crusader: No Remorse
(Reviewed PCR50: Score 8)

When not buying furniture polish with which to buff up your red latex body suit you may find yourself purchasing weapons from Weasel, the black market gun merchant. He charges the earth for his guns and ammo but here's a way to save a few bob next time you're on the market for some dodgy firearms.

Buy your guns from Weasel as normal but save yourself a fortune, which you can invest in even more powerful weapons of destruction, by not buying any ammo for them. 'What good is that?' you may wonder. Well, unknown to Weasel he is in fact a distant relative of the famous bald TV magician Paul Daniels and sells magic self-loading guns that can spirit ammo from out of the ether. To witness this magic for yourself simply begin a mission as normal and drop all of your new ammo-free weapons. Now pick them back up again and they'll be fully loaded. Now that's magic.

This chap is scary for all the wrong reasons isn't he?

Bad Mojo
(Reviewed PCR55, Score: 8)

Life as a cockroach isn't as bad as it may seem. Unless of course you're having trouble with that fuse box.

It becomes apparent later in the game that you should have shorted it out and so, armed with the combination, must backtrack all the way through the game back to it. Alternatively you could just enter the correct code the first time you come across it and thereby and save yourself an awful lot of hassle.

The first figure in the meter is always seven but you can alter the others by crawling backwards and forwards across the bottom three fuses. Change the meter until it reads 7-6-5-8. The fuse box will then spring into life then fizzle and then short out. Once this is done continue on your journey with the satisfaction of a job well done.

"Alright mate? Got a light? Cheers."

Franz Kafka has got a lot to answer for.

STORM
(PCR 56, Score: 3)

It's Electronic Arts' latest undersea adventure and it's... hmm... okay. STORM, incidentally, stands for Submersible Tactical Operational Reconnaissance Module. Perhaps they should stick to wheeling out FIFA, PGA, NBA, NFL and NHL every year instead?

Anyway, what if you're having difficulty playing STORM and need some help. Well, we've got just the things. Here's how to get full power and full ammo whenever you like.

At the menu highlight the Start New Game prompt and type GIMMEPOWERNOW. If all has gone according to plan you should hear an explosion sound to let you know that the cheats are in place. If this is the case hit [Return] to start your game. Now every time you press [Q] you'll be rewarded with full power and every time you hit [I] you'll replenish your ammo supply. Good.

Welcome to the undersea world of STORM. And you're welcome to it.

Just look at those wishy-washy undersea graphics go.

Mechwarrior II: Ghost Bear Legacy
(Not Reviewed)

And you thought you'd finished Mechwarrior 2. Now there's more.

A strange and scary figure loomed out of the shadows. Best shoot him.

More bloody *Mechwarrior II* codes? But no, what is this? These codes are not for *Mechwarrior II* but instead are designed for use with the *Ghost Bear Legacy* missions expansion package. That's alright then isn't it?

At present there are only two, but what a pair they are. To activate them you must first hold down [Ctrl], [Alt] and [Shift] together and then type:

CLARK which gives you rather handy X-ray vision.
KENT which makes you invulnerable to enemy attacks.

And another thing. Here's how to find the Easter Eggs (this makes sense if you've played the game, trust us). In the Ice Hall, click on the lights to the left of the screen. Next, in the Barracks, click on the poster to the right of the screen in front of the mission computer. And finally, go to the Drop Ship and click on the white computer screen to the right of the mission computer.

"As you might have guessed, Sid Meier's latest creation is pretty compelling. It's complex, absorbing, detailed, exciting, imaginative and utterly addictive. Civilization II is a classic in every sense of the word." – PC Review issue 54, April 1996.

CIVILIZATION II

Last month we showed you the way to victory via the not so noble art of war. This month we complete our Civilisation II guide by explaining the infinitely more worthy scientific route to success.

MAKE LOVE NOT WAR

This guide represents the second way of winning in *Civ II*. Last month we told you how to thrash your foes. This month we concentrate on the somehow more worthy route to scientific victory. The winner here is the first civilization to reach another galaxy. To achieve this you're going to have to equip your civilization with just about every scientific advancement there is before finally building the space ships that will enable you to colonise the stars. It's a long and arduous journey and you're going to have to work like a dog to gain the necessary technology to do it but it's persistence that will prevail.

FROM HUMBLE BEGINNINGS...

Much as it may stick in your throat to be nice to new, obviously inferior civilizations, you must do so. Let them help you, stealing all they have of any worth, then, at the last minute make a mad dash for the space race and beat them to it. It's going to take some time to beat them all in the race to space travel but if you follow a few simple rules it won't be such a problem. For your first steps we suggest that you follow the same instructions as last month's less enlightened approach to victory. Regardless of whichever route to victory you may choose the foundations of a successful civilization are the same.

CHOOSE YOUR SPOT WISELY

As before, you should set yourself up with a nice little set of cities. Remember to take the time to explore before founding your cities. There may be a more fruitful area close by and you'll only kick yourself later if you miss it, so have a good look around before you dig in. Coastal sites are excellent sources of natural resources as are sites near rivers. Watch for the presence of things like fish or mineral deposits. Remember that your ultimate goal is to produce enough food to feed a growing population whilst still producing enough shields and trade icons to further rapid scientific development.

ARMY SURPLUS

The rate of growth of your cities depends upon food output. In this more enlightened strategy you're aiming not only to feed your population but produce a little extra with each 20 year time period so as to feed an increased population. As this population increases achieving this surplus each turn will be much harder so keep looking at the city screen and moving your workers around trying to squeeze out that extra bit of output. Remember, the moment a unit has fulfilled its purpose you should disband it within the city to reclaim some shields and prevent it being an unnecessary strain on your resources.

SCIENTIFIC PROGRESS NEEDS A FIRM FOUNDATION.

Your goal at this early stage is to boost your city's food output. A good way of upping this and thus the rate of growth is to build a granary there, which effectively doubles the rate of growth. Or, if you're feeling more ambitious, have a stab at the Pyramid wonder. It can work, er, wonders. Food production can be greatly increased by irrigating the land around your cities, so it's well worth building an extra unit of settlers to do this. Use this settler unit as a kind of caretaker, irrigating the ground around all of your cities in order to boost food production.

POPULATION OKAY? NOW GO FOR SCIENCE.

Now you've got to boost your shield production. A good idea is to make full use of mines that are within your city's radius. Work towards the Industrialisation advance as this will be a great help at upping that output level even further. Develop more powerful power plants and dive headlong into the nuclear age at the earliest opportunity. Also, go for that important Manufacturing Plant improvement. Leonardo's Workshop is a vital addition and building the Hoover Dam and the King Richard's Crusade wonder are good too if you can spare the resources.

WILL YOU BE MY FRIEND?

Let's take a break from scientific development for a minute and remember that we're trying to get people to like you. Scientists are like that. Much as you might want to trample your opponents under foot, they will be far more useful on the scientific route if you're courteous with them. Take what you find useful then crush them the moment they've outlived their usefulness. In order to achieve this you'll require the co-operation of your opponents. Unfortunately, however, some neighbours won't give you the time of day. This is most likely due to their being in a more advantageous position. Other civilizations just love looking down their noses at you. If this happens just leave them alone. Never provoke another civilization into war. Instead give them whatever advancement they desire if this looks like it's going to avert bloodshed. Later on, when you're in a better position to speak to them as an equal, or if you have surpassed them in the technology race, you'll find they'll be much more accomodating. That's when you should make them reciprocate in a deal.

IT'S GOOD TO TRADE

Successful trade is the key to success here. Establish caravan routes to trade with other cities. Remember, you can have as many caravans as you like in operation simultaneously, provided, of course, that you can support them all. In this atmosphere of trade and prosperity you should act quickly to satisfy any market that may exist for any of the goods you can produce. Your allies' demands won't last forever. When setting up trade routes bear in mind that the further your caravans travel the more profitable the routes are. Best start building those ships as soon as you can so that your caravans can cross the seas to more distant civilizations and thus make even more money. Needless to say, the building of roads, and later the airport and highway, will boost your trading profits like nobody's business, making the supply of trade much quicker between your cities. After setting up links with other civilizations it's a good idea to use your diplomats to establish embassies within them so as stay in contact with your allies, enabling you to keep everything running smoothly and at the same time keep an eye on those less co-operative civs.

SECRET AGENTS, DO YOUR STUFF

Let's just say that no matter how nice you are, one of those rival civilizations just doesn't want to play ball. The chances are that the reason they're being so uppity is that they've got the upper hand on the technology front and don't want you to catch up. In cases like this, where you're in danger of falling behind in the technology race because you lack that important scientific advancement, there's only one thing for it – you've got to steal it. That's right. *Civilization II* is many things, and a training ground for industrial espionage agents as well. To enable such dastardly deeds you've got to equip yourself with a spy unit then send it into an enemy's city to steal whatever advancement you require. It's great if you pull it off. Getting hold of advancements has never been so easy, but be warned, if your spies are discovered by the hostile civilization you're stealing from the chances are they'll declare war upon you in an instant. Of course, it's nice to get things for free, no matter your line of business. But heed our advice – only use spies if you think you can get away with it. A policy of constant spying will get you nicked.

TIME FOR A NEW GOVERNMENT

So, there you are. You're working towards all sorts of useful and worthy scientific advancements instead of getting your hands dirty with the grime of war and having a thoroughly lovely time of it all. Perhaps you should work towards acquiring a more enlightened form of government to match your brainy, scientific and generally more benevolent demeanour. A definite improvement is the Monarchy, a great step up. The resultant greater tax revenue should have you gaining those city improvements in record time. The Monarchy, besides being a noteworthy tourist attraction, also benefits your trade income and the rate of growth of your cities and, provided you can get the luxury balance right and keep your population happy, will benefit your civilization enormously. In times of unrest remember that city improvements such as a Coliseum, Temple or Cathedral will help pacify your populace.

DOWN WITH THE MONARCHY, UP THE REPUBLIC

The next step up from the Monarchy is the Republic, which produces an extra trade unit for every location within the city radius that you already had one. This makes the Republic the ideal form of government for our purposes, producing plenty of tax income while offering the capability of producing plenty of science and trade goods. With the introduction of the Republic comes new responsibility to your people, and what a troublesome bunch they can prove to be. Now, the senate can over rule many of your more aggressive decisions, and will do so in an instant should you be foolish enough to make them. The republican senate aren't too keen on war so providing you stick to your peace-loving route to success they shouldn't give you any trouble. In this co-operative, trading, science based strategy this is definitely the best form of government to work under.

REACH FOR THE STARS.

Remember that trade is still the key. Feel free to swap advancements with other civilizations if they have anything decent to offer. Through trade lies the road to scientific enlightenment. Once your civilization is up and running you should place as much emphasis on this successful trade as you can, working towards greater, more important scientific goals, and setting the science/luxury balance as close to science as you dare without risking rebellion. In order to reach some of the later scientific advancements it may appear that you are starting right at the beginning of the discovery tree. Don't worry, this is perfectly okay. The trick is to keep shunning military advancements. These will just waste your time and go for scientific and industrial advancements above all others. Stick at it and you'll reach the stars long before your more aggressive opponents. Well done – you've won again.

"Star Trek: Deep Space Nine – Harbinger casts you as a Federation diplomat assigned to assist in a first contact with a race from the Gamma Quadrant, a vast, unexplored region. The aliens, known as the Sythians, come from an advanced civilisation." – PCR 55, May 1996.

Deep Space Nine:
Harbinger

So, just what is all this harbinger business all about. Let's see if we can find out what it means in our Deep Space Nine solution. Here's part one...

Right at the beginning of *Deep Space Nine* your runabout is attacked by aliens. At this early stage you have no idea that this is the case but you'll find out soon enough. Those Sythians are nothing but trouble.

After recovering your senses, Odo, the jug-eared shape-shifter, bubbles his way under the door and checks to see if you're okay. Have a quick chat with him. As you will soon discover, it doesn't really matter what you say to him. All the conversations in the game are carefully worded so that you will glean exactly what you are supposed to from them. For that reason we have not included which conversation options you should plump for in this guide, just ask each character what you feel like asking, it'll all work out fine in the end.

Get handy with the field
So, let's begin. Your first job is to fix the containment field before the cabin of the runabout is flooded with plasma. A tricky sounding task, but one which is easily accomplished. Spin round and move your cursor over the console behind you. This is the containment field control desk. When your cursor changes to the Starfleet logo

The first puzzle of the game. It might look tricky but it's dead easy. Just nudge those pieces of circuit board into place.

click there and get down to business. Your first job is to vent the plasma. Hit the button which will allow you to do so. The rest of this puzzle is pretty easy. Look at the damaged squares to the right of the screen and the intact ones to the right. Click on the one you want to make it appear in the circuit diagram on the right. Now click on the piece opposite to the direction in which you desire the new piece to travel. So, if you want it to slide left click on the on the piece to the right of it. The new piece always moves away from where you click. Keep nudging the circuit piece until it's over the matching damaged one. Repeat this for all three damaged pieces. That's it. Upon completion of

Odo is a curious chap. For a start he can turn into liquid and bubble his way under doors. Then there are those ears.

this task you'll be beamed to Ops where you can meet some of the crew.

Turn to face
The game employs a rather curious navigation method. Just turning to face the person you want to speak to in order to facilitate a conversation can be a task in itself. After speaking to Captain Sisko you must talk to Dax, the girl in the blue. After a short conversation you'll take part in the game's first action sequence. Shoot as many of the drones as you can. After this you'll resume your conversation with Dax, then you should turn your attentions to Sisko. Ask him nicely to turn on the turbo lift, enabling you to leave Ops.

Your task is to find and speak with Karig, who's in the habitat ring. Unfortunately the lifts to the habitat ring are out of order so you must travel to the lower promenade and continue on foot. Turn left out of the lift and look out for Odo's office on your right. Speak with him then continue along the promenade to a circular door, also on your right. This is the door through to

This is where it's all happening. Ops is always a hive of activity. Every time you visit there's a new lead to chase up.

the habitat ring. Go through and try to open Karig's door. It's locked. Return to Odo and he'll give you the code to disable the security system. Now return to Karig's quarters and go in. You'll find him slumped on the floor and Odo will appear. Talk with Odo then return to Ops and speak with Captain Sisko. Seems your mission now is to help Odo find Karig's killer. Speak to Dax again and she'll tell you about Karig's logs which need decoding. While she's preparing them return to the habitat ring, go through the cargo bay and find Farrow. Talk to him then return to Ops where Dax has the logs ready.

To decode the logs you must first translate the words of each colour bar by using the computer. Once you know what's what, place the bars in this order: Purple, Green, Yellow, Red, Blue, and then select play back. This curious action will give you access to the logs. Access 'Clarity' and speak with Dax again. Now return to the cargo bay and take part in a shoot-out.

After this poor old Ensign Yarrow will be attacked by a Red Lykotian.

This scaly gentleman seems innocent enough but is that happy-go-lucky expression hiding a dark, dank secret?
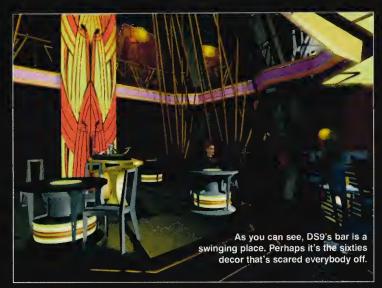
Let's face it. The action sequences of DS9 are nothing to write home about.
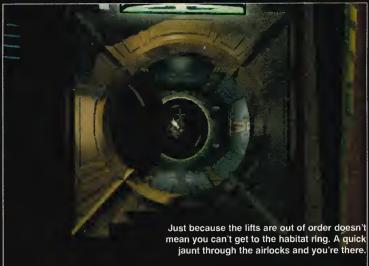
Run away! This lady wants to sell you a copy of the Watchtower.

As you can see, DS9's bar is a swinging place. Perhaps it's the sixties decor that's scared everybody off.

Just because the lifts are out of order doesn't mean you can't get to the habitat ring. A quick jaunt through the airlocks and you're there.

Shoot that nasty alien and get his refraction device before leaving. This will help you track down the Lykotians. One is in Karig's room, one's by the temple opposite Quark's bar, one is in the upper bar, one is in the habitat ring and the last one is in the airlock between the cargo bay and docking ring. Kill them all.

You'll now play through a simulated shooting session initiated by the Sythians, after which you embark on a shuttle mission. After the crash, make

Even when alone in his own office Odo insists on standing bolt upright, totally motionless. He thinks it's cool.

sure you get the phaser from the cabinet at the back then enter the drone factory through the gap beneath the control panel. The maze has five doors leading from it. You came in one of them and must reach the other four. To make matters more complicated this must be done in the correct order as the probes in the maze will open fire upon you if you get it wrong. Firstly make your way to the centre of the maze. Save your game as often as you can be bothered to, as this will speed things up if you meet an untimely demise. Keep going towards the centre and you'll find the turbolift. Use this lift and it should take you to the power transfer room.

In this room you will find two panels, each bearing logos which look like the probes you met in the maze.

Click on them both to turn off the probes in the maze, making your task a lot easier. Now head back into the maze and retrace your steps until you reach two doors. One has a green panel on it. Ignore this one, this is the one you came in from. Go through the other instead. There you will find the first generator. Approach it and activate it. Return to the doorway, from which you will be able to see the other side of the maze. Make your way across to the door that is directly opposite and go through. There you'll find generator number two. Again, approach and activate it. Now return to the centre of the maze and take the turbolift back to the power transfer room.

Power to the panels

Your generator starting exploits have worked wonders. All the panels you require now have power and are ready for your commands. Despite looking complicated the only part you're interested in is the centre of each panel. Locate the panel with the pink centre and click on it to activate it. This will trigger a strange pink arc in the centre of the control. Very nice. Now do the same thing with the yellow panels, blue panels, green panels and finally use the red panels, which are the ones you used to disable the probes. Once you've clicked both of them the control panel will short circuit. Don't worry, this is meant to happen as it has disabled the shields that prevent you from entering the last door in the maze.

Go back to the maze and head through that last door. You will find yourself in a room with three doors leading from it. The only one of any interest is the one to your left which leads to the communication room. Go through this door which, appropriately enough, features a symbol of a satellite dish on it, and make your way over to the other side where you'll find another panel. This is the comms control and

you can use it to speak to Odo. When you've finished yacking with the dry witted, authoritarian security man-blob, head back to the runabout.

Inside the runabout a new puzzle awaits behind a panel on your left. You must direct the coloured beams from top to bottom. Start with the blue supply line straight down until you come to the broken switch. Now just manoeuvre around it to the left and finish at the bottom. Do likewise with the red supply. Move the switches so that

the red beam is directed through the centre. With a spot of minor adjusting you'll be able to get the beam through to the other side. Next do the same with the white connection, directing all three beams through the centre and down to the bottom.
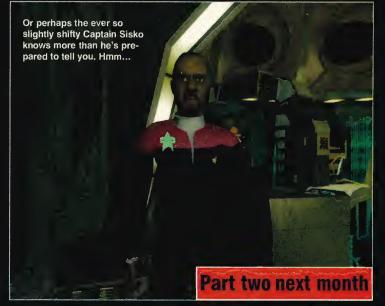
You're now halfway through the game. We'll return to help you get to the bottom of the fishy goings on aboard the DS9 in the final part of our guide next month. Until then, live long, and prosper.

Poor old Karig, as if the indignity of that green suit wasn't enough, someone's only gone and killed him.

The Sythians spacecraft wont leave DS9 alone. Surely they have something to do with Karig's death. Surely.

Or perhaps the ever so slightly shifty Captain Sisko knows more than he's prepared to tell you. Hmm...

Part two next month

Already intertwined with areas of PC computing such as VR, artificial intelligence and the Internet, artificial life is a field likely to see massive development over the next five years. In fact, it might even change the way we use our PCs for good. Over the next six pages we investigate Alife in depth, talk to the experts and give you a sneak peek at Creatures, one the most advanced pieces of artificial life software ever. Here's our special report by Garrick Webster.

Meet our cover girl

Kyoto Date, or DK-96, is Japan's virtual pop star. She's 16 years old, has blood type A, and lives with her parents and younger sister. Her interests include learning foreign languages, photography and collecting trainers. Her profession is Computer Graphic actress and she appears in TV commercials in Japan.

The creation of Hori Productions, Kyoto might eventually interact with people in real time. While she isn't an artificial life form, one day we could see virtual beings like her. We might communicate intelligently with them, play games against them and even buy their pop records. For more information see **http://tky063.tth.expo96.ad.jp/ virtualidol/index.html**

Kyoto Date in a moment of repose while modelling her virtual clothes.

ARTIFICIAL LIFE

Hello, sir. Who's about to revolutionise Alife? One of the most exciting new developments on the Alife scene is Creatures – a system including a neural network, internal biochemical system, authentic DNA replication in breeding and an environment full of objects that can affect a creature's life.

The people of Theme Park have a rule-based intelligence: they don't learn from their errors.

Watch evolution at work in screensavers such as Primordial Life – on CD Review.

Getting Alife

As organic species gradually become extinct, an ever increasing number of artificial life forms move into our PCs. From viruses to interacting flocks of virtual birds, we investigate.

Organic life is under threat. If the doomsayers are to be believed, the misuse of technology over the past few centuries could result in the destruction of our planet, and the death of all species on it. Paradoxically, our computers, sometimes seen as the ultimate symbol of over-industrialisation, are becoming a major key to understanding how life on earth works. As threats to survival grow around us, artificial life is establishing itself within our PCs and, besides perhaps helping to save the planet, it is poised to revolutionise computer entertainment.
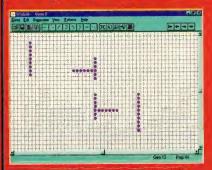
As a field of study, artificial life – or Alife – was founded by Chris Langton, director of the Artificial Life Program at the Santa Fe Institute, a key centre of study in field. For him, the idea of Alife is to study natural life by synthesising life forms using computers. What excites scientists like him is that by doing so you can expand the field of biology from the study of life as it is, to life as it could be. What excites us, however, is the impact Alife is having on PC computing. It is already affecting areas like artificial intelligence, organic art, the Internet, virtual reality, robotics and viruses.

As some form of intelligence is a characteristic of most animals, anyone simulating advanced life forms will try to give them ways of making decisions and learning.

This graphic represents the Tierra project, which could turn cyberspace into the home of millions of data worms – artificial creatures which live off unused computational power.

Playing WinLife

1 Cells are placed on the grid by left clicking with the mouse pointer. You can zoom in, hide the grid and manipulate selected cell patterns by cutting and pasting using the buttons in the middle at the top. When you've laid some cells, hit the button at the top right to see a pattern evolve. If you wish to remove cells, just right click on them with the pointer.

Artificial life – an expert talks

We questioned Alife supremo Dr David Cliff. We asked him exactly what his field of study is all about, why it's so much more interesting than artificial intelligence and, above all, why it's important to home PC users...

Basically, artificial life is the science of trying to create living things which aren't necessarily made out of flesh and blood." says Dr Cliff.

"Artificial intelligence work has gone into developing computer programs for specific functions – for things like learning to play chess, or being able to think up new tactics in a wargame. So you come up with a program that is very, very good at one thing, and not very good at anything else. The significant development in artificial life is the creation of artificial creatures which happen to be able to survive in some kind of environment – a software environment. They're entirely responsible for doing everything. They have to feed themselves and protect themselves from danger, not bump into things and not get lost. Artificial life forms need a complete set of survival skills and they don't necessarily need to be very clever,

although they can often learn over the course of a lifetime, or they can evolve over a number of generations to be better.

"I think that it's probably the case that the most significant application over the next five years in home PCs will be in entertainment software. I think also, perhaps in roughly five or ten years, having some kind of artificial-life-inspired autonomous agents that can do the work

for you on the Internet would also be a realistic possibility.

"The costs of building robots are unlikely to fall over the next five years. In maybe 20 or 30 years it may be reasonable to talk about intelligent home appliances, such as, say, a vacuum cleaner which can steer itself. But that's a really long way off, as building robots is still a tricky task and very expensive. There are a lot of problems with robot hardware that you don't have to face when you're dealing with software agents in some kind of virtual reality or software environment."

David Cliff is Lecturer in Computer Science and Artificial Intelligence at the University of Sussex. He has worked in Alife for eight years, creating computational models of the nervous systems of insects, developing neural networks to control robots and adapting Alife software for entertainment purposes.

Most games boast some form of artificial intelligence. Usually, it's nothing more than a set of laws. If you can't go straight, turn left. If you can't turn left, turn right, and so on.

Even in relatively complex games, most characters with AI are simply following a set sequence of rules. In *Theme Park,* for instance, the little people certainly resemble real people in their requirements. They eat, drink and go to the toilet. They want to have fun on rides, but if they imbibe beforehand, they're sick. But while they're smart enough to look for things they like, they never learn the relationship between eating ice cream, going on the whirling waltzer and vomiting.

Behaviour governed by rules is fine for most games, but it's not really intelligence at all, and any creature following such brittle patterns would soon die out. Instead, the

pioneers of Alife today prefer to use a superior form of AI: neural networks.

Give it some thought

Inspired by the way a brain works, a neural network consists of a large number of interconnected processing units. Inputs are recorded in these 'neurons' and linked to outputs. By storing inputs and relating them to the outcomes of its actions – both successful and unsuccessful – the neural network learns by accumulating connections and adjusting its behaviour accordingly.

The ultimate test of AI is for it to interact with a human without that person actually realising he or she is dealing with an artificially intelligent entity. There are already programs, like *Chatterbots* in multi-user dungeons (MUDs) for instance, which can

for long periods remain indistinguishable from human players.

In truth, the laws of behaviour for most game characters are more like instincts than intelligence. Hence, games like *Trophy Bass* and other fishing sims might still be called Alife systems. After all, fish have short memories and react to their environment without apparently learning anything. Likewise, where the fish in *Trophy Bass* swim depends on the light, water temperature, season, and what they'll bite at is determined by their feeding habits.

Motivation by realistic instincts is one step towards an Alife system. The next might be a game with fish that really interact with their environments – fish that eat things other than your lures, and which mate, fight, swim in schools and generally get on with it in ▶

You can have a lot of fun with this Game of Life for Windows written by John Harper. The rules are simple. A lone cell will die, as will a cell touching just one or three other cells. A cell touching two other cells, however, will reproduce on its empty side. Try it out.

2 Have some fun by making a pattern constituted by your initials. You'll be surprised what you'll come up with. Our editor's initials, J A B, for instance, bred for some 4,000 generations. There's a population and generation counter to the bottom right of the grid. Most people's initials tend to last for about 600 generations, depending on how elaborately they make the letters.

3 Of course, the game element is to try and design a pattern of cells which is infinitely self-replicating. One of the simplest patterns to this end is the one you see above. Try it out and this little shape will go wiggling off in the direction it's pointing in. A message may pop up telling you that its shape is the same as that of a previous generation, but essentially this pattern will go on for ever.

4 Now let's have a look at someone else's self-replicating pattern. Go to Open on the File menu and load up the file LOGROW.LIF. Hit the play button and see what happens. It's even more impressive if you zoom out. Can you make one like this? Numerous .LIF files have been provided for you to experiment with. See if you can pick up some more infinity patterns from them.

Breeding forms with FORM

FORM is a piece of organic art software, written by Andrew Rowbottom, that actually breeds and mutates shapes.

Run FORM and using the file menu open the file ANONITE2.FRM. It should be in the Others directory, which itself is in the file directory. Change the screen size to 640 x 480 in General Settings, which is under the File menu, and then click on Go! After 15 seconds or so you should see the above.

Now select Mutation Settings from the File menu and choose the 3 x 3 layout. Make the Mutation Factor 2 and the Steering Factor 0.5. Click on MutateMode! at the top of the screen and hit Go! After a few minutes rendering you should see something like this. Now try Mutation Factor 5 for something wild.

Click on the offspring you like the best and want to breed from. Hit Go! again and you'll produce another generation based on your choice of parent. Diddle the Mutation Settings all you like. Now try loading some of the other FRM files. You are the mutator!

▶ the lake ecosystem. This raises three other interesting areas of Alife – procreation, group movement and virtual environments.

The need to breed

Just as reproduction is a key to biological life, it's something to look for in Alife too. Some of the earliest Alife systems were based on making organisms that could multiply by themselves. One well known example is the *Game of Life*, invented in the 70s by John Conway. Also called a cellular automata, the game consists basically of putting cells on to a grid. These cells breed by simple laws, so by setting the correct pattern of cells you can create an infinitely breeding population, and an unexpected pattern across your screen. (See *WinLife*.)

The environment *Life* cells live in is, of course, extremely simple. It merely gives the creatures a reason to live or die. Some more complex Alife systems, however, aim to simulate a proper biosphere. In games like *SimLife*, for instance, life forms depend on one another to procreate, but also rely on the right climates and terrains. In the case of animals, they must find the right food –

usually they consume other species – and overcome obstacles such as mountains, lakes and rivers.

This is where virtual reality comes into it. In *SimLife,* the virtual environment is quite complex. In the future, however, the arenas of Alife will be far more impressive and extensive. We'll soon be able to get 3D virtual fish tanks, and even things as ambitious as fully immersive virtual game reserves or – shudder – virtual hunting expeditions.

The animals in *SimLife,* unfortunately, wouldn't quite fit into such a grand scheme. The main problem is that – despite following a large number of behavioural rules – like the fish in *Trophy Bass* they're only partly like animals in the real world. For a start, they don't appear to live socially. They breed and compete for food, but they don't display any sort of flock, herd or school behaviour.

Serious Alife developers, however, have long been creating software that can replicate the way in which herds, schools and flocks move. The Swarm project, also headed by Chris Langton, is one multi-agent system simulation, and another is Boids.
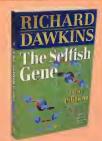
Both simulate groups of interacting individual creatures.

Competent virtual reality biospheres with realistically moving and breeding creatures may benefit PC entertainment. But they aren't always the first things on the agenda for those who treat Alife as a serious science. What they want to do is observe evolution in action. The beauty of Alife for them is that using computers they don't have to wait aeons to see it happen.

Mutate to live

Lots of Alife study to this end has used evolutionary algorithms. Using them, the genetic development of a population can be simulated with parameters for natural selection, mutation and adaptation over hundreds or thousands of generations. Within the algorithm are survival criteria, and those determined to be good competitors contribute their (more successful) attributes to the next generation. With the possibility of mutation, some of those in the next generation might be altered slightly – for better or worse – but compete again to create diversity in further generations. This

Alife enthusiasts take note!

Richard Dawkins' book, the *Selfish Gene,* has inspired numerous Alife programmers. Another Dawkins book, the *Blind Watchmaker,* includes an chapter on Alife. £8.99, OUP.

Evolutionary Art and Computers by the organic artist William Latham and mathematician Stephen Todd. It explains their patented Mutator software. £29.95, Academic Press.

Log on to Technosphere and take part in a real-time Alife experiment on the Net. Design a creature and set it loose in a virtual environment. It will e-mail you when it breeds or dies.

Little Computer People, a classic from the days of the Spectrum and C64. You are God to tiny simulated people. Available in Activision's *C64 15 Pack*. £15.99 from Activision, 0181 742 9400.

Exclusive Alife news from William Latham

PC Review can reveal that William Latham's company, Computer Artworks, is working on an Alife game. With a 3D virtual environ-ment, part of the game will be based on Latham's Mutator software.

"I can't say too much," Latham told us, "but it will have the unique, bizarre, surreal look to it. It's not like we're doing a Millennium and putting little funny Sonic characters in there or any-thing like that. It will have an original look and feel to it, and will incorporate all the obvious techniques we're associated with, such as Mutator, plus a whole load of other stuff which we've done in the past but hasn't been so publicly seen – stuff included in the book *Evolutionary Art and Computers*. Strategically we want to be seen to be within the artificial life game community."

The game will have the same aesthetic feel to it as Latham's art-work and will be published by BMG Interactive. Meanwhile, you can pick up Computer Artworks' *Organic Art* screensaver, which scored a 9/10 in issue 55. A professional version of this software will be released soon.

William Latham is moving on from the organic art to make a full-on 3D artificial life game. Needless to say, we can't wait.

In *SimLife* you place plants and animals in a virtual environment and try to build a working ecosystem. Dated but still a great game.

sounds quite complex, but most of us have already seen genetic algorithms in action, in programs like *Organic Art* by William Latham. Here, the colour, shape and pattern of the forms are contained in an algorithm. With some software you can even cross-breed the shapes, choosing the offspring you wish to go ahead to make new generations. (See the *Form* box on page 68) Organic or evolu-tionary art in itself, though, isn't Alife. Instead of simulated natural selection, the artist's taste decides which forms survive to breed.

Worms on the digital frontier

The alternative to putting all the genetic information into algorithms covering whole populations, is to simulate individual creatures, each with its own genes and survival needs. If they're released to interact in a community and there's a certain possibility of mutation between generations, you can then observe evolution in progress.

Just such an Alife system is currently being tested in an experiment called the Tierra project. Instead of living in a virtual environment with food, terrains, climates and so on – like in *SimLife* – computers

themselves form the environment. And the creatures are not like anything we know in the real world, they are strings of code which govern individual behaviour and reproductive capability. To live and reproduce, each digital worm requires only computational cycles.

Currently, these worms only exist when *Tierra* software is running. This provides them with their environment, within which they can seek out unused processing power to replicate themselves. If other software is running, the worms get less sustenance, but if *Tierra* is running over a network or on the Internet, the worms can seek a free flow of cycles. So, while we all use our PCs during the day, the creatures would go to California and Japan, and when the sun comes up on Venice Beach, they'd flee back to Europe.

With the possibility of mutation built into their genetic codes, there is the chance that various strains of these worms could adapt to different conditions. Soon, *Tierra* software for Windows 95 is to be released so the experiment can be spread across the Net One main worry, however, is that these worms will eventually clog up all the world's systems, or even evolve to the extent that

they don't die when they should. The other worry is that they might carry with them another form of artificial life: viruses. But, unlike *Tierra*'s creatures, viruses live off software. They infect it and corrupt code in order to reproduce themselves. There are already a number of viruses out there programmed to adapt themselves, thereby overcoming the new virus software as quickly as they can replicate.

There is, of course, a practical upside to this. What if, for instance, you could combine *Tierra*'s worms which seek out unused processing power, with a neural network that can learn your personal interests. You could then send your own intelligent agent out on to the Net to find new information relevant to your professional or personal needs. Turn the page to find out more.

Whatever the ups and downs Alife presents us with, one thing is pretty much certain. You're going to be seeing artificial life being applied a great deal more in PC applications over the next few years. And who knows? Soon you might be buying records by Alife pop stars looking something like our cover star, Kyoto Date. *(GW)* ▶

Here's a selection of Alife and Alife-like software you can expect over the coming months.

Citizens enables you to control the lives of 16 people in a virtual town environment. Raise and lower motivations like hunger, sloth and lust to manipulate them. Released in October.

Theme Hospital from Bullfrog follows up the fabulous *Theme Park*. As hospital administrator you oversee the curing of the ill. Incredibly complex AI systems. Due out in November.

The Evolution of Life. This is the infotainment road to artificial life knowledge. The CD is about Richard Dawkins' theories on evolution and genetics. Watch for our review next month.

Creatures could be the most advanced form of artificial life yet released. And guess what, we've got an exclusive review starting on page 70. Turn the page for more details.

The science of Creatures

Creatures features oodles of options for you to diddle with. Here are some of the complexities you'll have to contend with.

Farm-fresh, free-range. The Egg Hatchery is the place to store potential offspring. You can even store eggs on disk if you want.

The Health Kit is what you turn to when you want to check your creature's temperature, see how its brain is functioning and so on.

You can play God with your little pets by meddling with their genes. You might make yourself a supremely stupid one, or you could make some sort of uber-creature. Scary. And you don't even have to be a qualified genetic engineer.

Creatures

Despite its high cutey-pie factor, Creatures is all set to become the most advanced Alife software ever to appear on a Windows desktop...

What would the perfect artificial life application for the PC have in it? Well, if you've read the previous few pages, you'll probably have a good idea. For starters, it would include an accurately simulated life form capable of making decisions, and learning and behaving in a life-like way. That organism would probably live in an elaborate virtual environment and would, at some stage in its life cycle, be capable of passing its genes to future generations by reproducing. It would, in short, be just like a real creature.

Believe it or not, Millennium Interactive has come up with just such a system. It's aptly-named Creatures, and it should be available in September.

Basically, Creatures makes you the owner of a vivarium measuring three screens high by 12 wide. This vivarium environment provides a home for up to a dozen cuddly little critters. Caring for these creatures, you're able to feed them, teach them to look after themselves, chastise them, give them toys and even breed them. And although these big-eyed cuties might look like furry little children's toys, they're driven by one of the most sophisticated pieces of Alife software ever seen on the PC. "What we've done with an artificial life organism is take a whole load of ideas from the neural network people to create a virtual brain," says Anil Malhotra, Director of Millennium's CyberLife project. "But what we additionally need is some sort of system that keeps pumping away and from time to time causes the brain to interact and make a decision."

The neural network brains of the creatures are motivated to act by a highly detailed biochemical system. "In Creatures we have a virtual blood stream, we have a virtual endocrinal system, we've got pain-increasing hormones, we've got testosterone so our creatures actually have a motivation to breed in exactly the same way you and I

The killer Grendel entities form one sort of natural selection in the Creatures environment. They can kill your creatures.

One toy is the ball. This will release endorphins into the bloodstream of the creature and he will remember the effect. This is a good thing.
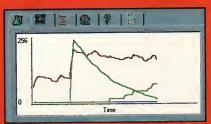
Meet Anil Malhotra, Creature creator and Director of CyberLife at Millennium.

You'll find virtual pet cemeteries on the Web, and *Creatures* has its own digital shrine. When one of your little flock passes away, you can bury it in the hallowed Creatures graveyard and visit your loved one regularly.

In the Science Kit you can check on things like the level of comfort. This one's had a sharp influx of pain-increasing hormones.

The Science Kit includes a monitor of brain activity. You can see where the motivations are arriving in your creature's head.

do. We've got adrenaline in there, we've got all the biochemical enzymes needed to impute that you're hungry etcetera, etcetera. There are actually 250 genetically-specified internal chemicals," continues Anil.

With their little bloodstreams cycling all this internal information through the neural network about ten times a second, the creatures in *Creatures* have plenty of motivations to govern their behaviour. Using their external sensory organs, they can act on their most intense impulses. So, initially, when they're hungry they'll put things in their mouths to see if it's food. And when they're cold, they'll move towards fire, often burning themselves at first by getting too close. As being burned triggers a sharp release of pain increasing hormones, their neural network brains will remember the experience and not repeat it. Likewise, when the creature finds food and absorbs glucose into its blood stream, the brain remembers. Gradually, the creatures learn what's around them.

At a certain stage in the life of each creature, its reproductive system will come into action and it will seek a mate. This is when all the interesting genetic stuff starts to happen. "We wanted these things to breed because if you are copying biology, that

happens. And when they breed we wanted their offspring to have the capability of having a unique set of genetic characteristics. So, what we did was we created this quite complex software which created a simple but authentic model of DNA which we call Digital DNA. When the creatures breed, a daughter genome gets created and random characteristics from each parent are selected and placed on the daughter genome. Those things that are deemed to be instinctive tend to automatically get inherited, but all the things get inherited randomly," says Anil Malhotra.

Like father, like son
Not only does the breeding process allow for inheritance of traits from parents, it has built-in variations. When genes are cut, errors can occur and the corresponding genes on daughter genomes missed out or duplicated. If duplicated, the second copy could give rise to new traits in future generations. There is also an arbitrary possibility of mutation. Future generations of creatures, therefore, could be very different from their parents. New species might even evolve.

"Suddenly you get real biodiversity introduced into these creatures through the

generations," explains Anil. "And the reasons some of the artificial life scientists are interested in the product is that, as one of them put to me once, real evolution has only ever happened once and we're, roughly speaking, the most sophisticated outcome so far. With potentially thousands of users in the world, breeding over time tens or hundreds of thousands of generations, it might be possible to detect how and for what reasons particular diversifications in genetic code can take place."

Should creature owners choose to breed and exchange the data via the Net, we could well see a huge evolution experiment taking place. Of course, most of us will just treat our creatures as pets rather than some kind of lab experiment. Proper care of the little critters pretty much demands that you treat them as individuals.

And, of course, we'll have to deal with their deaths. *Creatures* have a lifespan of about 40 hours. But there are things that kill them. There are dangerous objects, such as poison. Then there are actively belligerent agents, called Grendels. If the creatures fail to give these beasties a wide birth, they'll get killed. Even in their cute environment natural selection is at work. *(GW)* ∎

The virtual vivarium in Creatures includes a cablecar system for them to use as transport.

A creature hatches from his egg. A fridge of food and a fire are near. Good luck, little fella.

If your little creature drinks from the still, he could very well get drunk. Wonder if this will affect the long term memory of his neural network?

Next Month
We'll have the exclusive demo and review of Creatures.

A family picture featuring all the main players in human evolution.

ORIGINS OF MANKIND
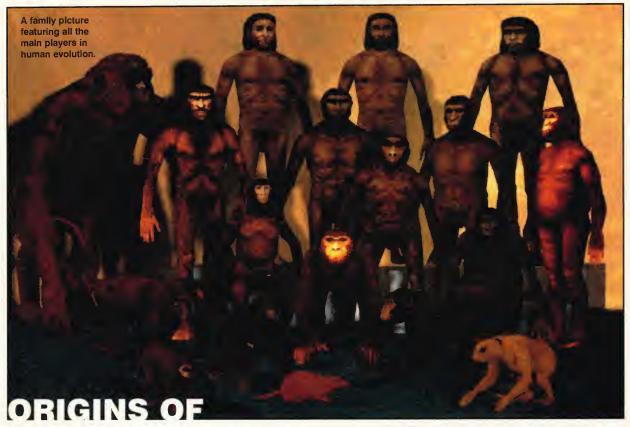
You'll have no idea just how scary your extended family really is until you look at this compelling CD-ROM.

hen grandads advise us to know our roots, this isn't quite what they mean. Our wisest relatives may be able to tell us the maiden names and birth places of our great-grandmothers, and maybe even our great-greats, but they're not likely to take you aside and trace the family tree back 70 million years to the times of Purgatorius, our earliest known mammalian ancestor.

Origins of Mankind is the CD-ROM to do this. And while it won't tell you anything about your great-grandmothers, it does contain plenty of fascinating information all about our prehistoric ancestors, from the Purgatorius, a 150g insectivore contemporary of the last dinosaurs, all the way up to Homo sapiens sapiens, who first appeared about 90,000 years ago.

There's a great deal more to it than dates, weights and funny Latin-esque names, too. *Origins of Mankind* is an easily navigable disc, with some interesting and effective features. Its main interface is standard multimedia fare – a desktop littered with objects which take you off to the disc's nine sections.

Among them is the Palaeontological Discoveries chapter. Here you're given a map of the world and asked to specify on which continent your quest for evolutionary information should begin. Africa and Europe offer the most palaeontological finds, but to get away from the beaten path you can try South America. Choose a continent and a ▶

In the Mission section you can follow the excavation of an old Neanderthal cave. They had fire and tools, and buried their dead.

The time spiral is little more than a twisted timeline. It shows the gaps between developments, but is far from interactive.

CONTENTS

Meet brother Habilis

According to Origins of Mankind, Homo habilis was the first human – or the first species in the genus Homo. Here's your chance to find out more about your long-lost ancestor...

1 The first Homo habilis skull was discovered by the Leakeys in Kenya in 1963. Flint Implements found nearby Indicate he walked upright, couldn't run and may have spent some time in the trees.

2 The Ancestors and Cousins screen enables us to compare the face of Homo habilis to that of modern man. We learn that habilis grew to 5'1", weighing in at around 111lbs. Skulls and skeletons can be compared.

3 The environment details on Homo habilis show he shared the African planes with another upright primate, the Paranthropus boisei. Here we learn that habilis could build his own shelters, but used natural ones too.

4 In the Roads to Evolution section, we see our relative in the lineage of human primates. He lived in the Pliocene era, more than 1.6 million years ago. The animation on the left takes us to our other relatives.

5 Another fact-filled screen shows the classification of this species, its range in East Africa and a sketch of It. We're also told that this ancient beast had a brain one third the size of our own, and ate a diet that included meat.

6 Finally, we can morph the form of Homo habilis into that of our own – over a million years of evolution in a few seconds. Too bad the tiny animation is blurry. We aren't told anything about how the adaptations occurred.

PCR QUIZ

Know your roots

Can you put these skulls, which are all part of our lineage, into the correct evolutionary order?

1. Homo habilis
2. Purgatorius unio
3. Kenyapithecus africanus
4. Homo erectus
5. Aegyptopithecus zeuxis

1
2
3
4
5

The correct order of skulls is 4 3 5 1 2
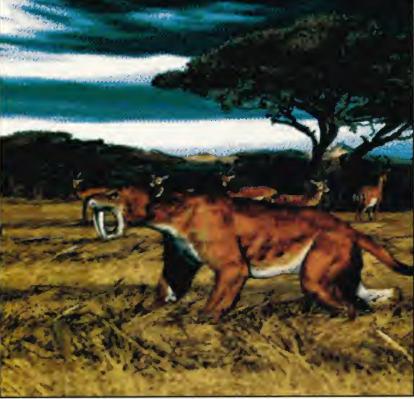
From the Environment screen you can find out about other extinct animals. This big cat hunted the African plains inhabited by Australopithecus afarensis.

Purgatorius

Clicking on the timeline buttons across the top of the screen will call up a quick discussion of the geographic and climatic features of the planet for any era.

scrap-book-style multimedia presentation kicks off. Photos of the La Salle mountains in Bolivia appear and dialogue between a man and woman erupts: "These mountains are awesome, aren't they," says the man.

"If you say so," she responds. "Are there any fossils in them?"

"Sure. A Frenchman called Hoffsteader prospected them in 1967. That mandible fragment was given to him by Professor Branisa from La Paz." Pictures of a toothy jaw fragment appear.

"So it wasn't even Hoffsteader who found it?" she asks.

"True, but he was the one who studied it. He demonstrated that it was the oldest primate in South America. He named it Branisella boliviana."

The first tool-using humans

This presentation style is typical of the Palaeontological Discoveries section. The use of dialogue rather than a single narrator is in theory an excellent idea, adding life to the presentation, but most you'll find the lack of in-depth detail is slightly disappointing. For example, you can't study any of the pictures up close, and there's no interactivity. Surprisingly, even the work of the Leakeys, who found remains of the first tool-using humans, Homo habilis, is pretty much skimmed over. The debates which

Gigantopithecus blacki
Gomphotherium
Gorilla
Hipparion
Homo erectus
Homo habilis
Homo saplens archaic
Homo saplens neanderthalensis
Homo saplens sapiens

The essential glossary isn't hyperlinked to the rest of the disc, making it difficult to use.

surrounded the Leakey finds are never even broached. A disappointing oversight.

Sticking with our South American cousin, however, more on Branisella is found by clicking the link to the Roads of Evolution chapter, in which an interactive diagram demonstrates the branches along which our ancestors evolved. Branisella appears in the oligocene era, about 28 million years ago, and a screen on this little monkey is another click away. It had 36 teeth, weighed 1kg, and is thought to have migrated to South America, moving island to island across the Atlantic when the ocean was much narrower. A map highlights its range in central South America and a sketch shows a grey-brown tree monkey. Using the road to evolution diagram, we can go back to Branisella's ancestor, the Apidium (from 35 million years ago), see its descendants, the Tremacebus (18 million years back) and the Ateles (the spider monkey of today) or look at any of the other 35 primates on the disc.
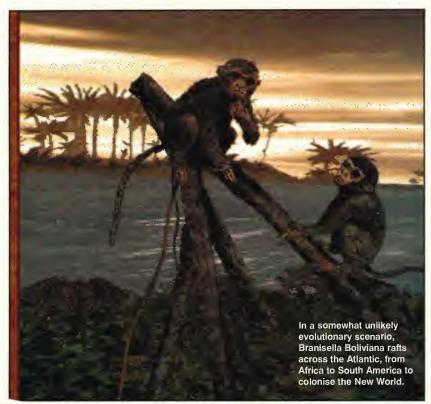
To study the anatomical features of your chosen ape-man, the Ancestors and Cousins screen is a necessary stop. Here you can view their heads, skulls, bodies and skeletons using 3D rotatable models. You can also compare the Branisella's physique with that of a previous or more recent primate species. For instance, its anatomy can be compared to that of Kenyapithecus africanus or Homo habilis. One good feature enables you to rotate the skulls, heads and bodies of ancient primates. Having seen the beasts on the evolutionary timeline, you can put them into context by comparing physical features. But the rotatable models are small, fuzzy and under-detailed.

Swamp-dwelling pig-horse

Using the Environment button you can study some of the creatures contemporary to the ape of your choice. Branisella looks out over the water to see a Basilosaurus, a carnivorous whale-like mammal, while in the jungle hides the Astrapotherium, a swamp-dwelling pig-horse. Snippets of text and pictures are available, but there's little depth. The Branisella's environment screen shows these monkeys rafting their way across the Atlantic on a bundle of weeds and sticks. Interesting.

The final morsel of information on the Branisella is to be unearthed by hitting an ear button and listening. It's a recap of all these details, delivered with child-like zest by the narrator. "I am the first South American in this portrait gallery, and yet I undoubtedly have African roots…"

All the creatures appearing in Origins of Mankind are similarly profiled. If you're studying any of the 10 species in our direct line of ancestry, however, you can also watch evolution occur using morphing animations. You can morph a Purgatorius unio into a

In a somewhat unlikely evolutionary scenario, Branisella Boliviana rafts across the Atlantic, from Africa to South America to colonise the New World.

Cro-Magnon man, discovered in France, is in the Palaeontological Discoveries section of the disc.

Homo sapiens sapiens and vice versa, or morph any of the species in between into one another. Skulls, heads, skeletons and bodies can be evolved, and the timeline shows the years passing as evolution occurs. But as with the rotating 3D anatomical models, the view window is small and blurry, and ultimately it seems a bit meaningless. There are no suggestions as to how these creatures changed their behaviour, eating habits or modes of movement. It's a natty feature, but exhausted in about half an hour.

The Theories section of the disc, however, might seem to be the place to go for more depth. Indeed not. It's presented in page-by-page book fashion, but it's hardly bookish in content. With only 29 pages there's hardly enough to span the philosophy and science stretching from theories of divine creation, through natural selection to genetics. A quick read (that's all it is) confirms this. Darwin is covered in just a few sentences.

More substantial is the archaeological mission, in which you click your way through a mock dig. It's aimed at a young audience,

Gigantopithecus

The semi-erect Gigantopithecus blacki was a 300kg vegetarian.

but shows how we've learned from our Neanderthal ancestors. After assembling a team of paleoanthropologists, anthracologists, petrologists and so on, you find out what each expert does. For instance, the condition of the bones tells us how the creatures died; microscopic marks on their teeth tell us about diet; and flint tools, with the nearest source of flint 90 miles away, suggests they may have been part of an exchange economy.

The animations, rotatable 3D models and roads of evolution diagram are great, but the disc's longevity is questionable. The topic is huge and full of conflicting theories, yet everything's presented in a straightforward manner. It provides an interesting introduction, but anyone wanting detail will be disappointed. (GW)

James Ussher Divine Creation

The screen shows these monkeys rafting their way across the
Atlantic on a bundle of sticks. Interesting.

Detailed (ish) street maps are available which, but take ages to load and aren't properly linked to the major sites displayed on them

This San Giobbe alterpiece by Giovanni Bellini is one of 200 artworks in the Guide.

The Parthenon is reduced to a small video clip on a black screen.

GREAT CITIES: EUROPE

With travel information on 15 cities, plus a list of posh hotels and Amex sites, it's Euro 96 of an altogether different kind.

15 cities covered in some detail, but the presentation is unappealing and of limited value.

PC REVIEW VERDICT

4

If you're surprised to learn that London's weather is rarely extreme, but is often unpredictable, you'll be amazed to learn that while London buses aren't as speedy as the underground railway system (also called the 'tube') buses do offer a better view of the surroundings, especially from the upper deck. Temperatures vary between 43 and 79 degrees, but occasionally drop below 32 or rise above 86.

The choice of Fahrenheit rather than Centigrade is a dead giveaway to the main purpose of this double-disc set: to arm the American tourists with prior knowledge before setting off to 'do' Europe. But there's plenty here to convince Euro-sceptics that channel-hopping can offer loftier pursuits than picking up cheap booze and fags. Apart from London, you get the low-down on Paris, Florence, Venice, Athens, Berlin, Vienna, Lisbon, Edinburgh, Madrid, Brussels, Munich, Prague, Rome and Amsterdam.

Pick Prague and you'll have to shut the program down and find the other disc now because, as with all double-disc sets, the thing you want is always on the other disc. Mind you, a simple 'Insert Disc 2' button would have been nice, rather than having to quit and begin all over again, compulsory animated intro and all.

From an American point of view, Prague seems to fall into the category of 'everyone knows where it is, but nobody wants to go there'. Compared to London or Paris the info is scant. We're told that the main square of Prague's Old Town has changed little since the late Middle Ages and that most of the houses on the east and south sides were built around 1230, but that hardly makes it sound appealing, now does it? Even the legendary Tyn Church is reduced to a sentence that runs, '18-spired Gothic church was begun under Charles IV in 1365; the tower was built almost 100 years later'. St Vitus cathedral fares a little better with a short video clip, but even this is uninspiring.

Great Cities tries to give you the best of both worlds. On the one hand it's a TV style travel programme with 300 video clips of sightseeing hot spots and reproductions of some 200 works of art, all narrated over classical background music. On the other hand, it tries to give you the kind of detailed travel information that TV travel shows never quite manage, and if they do, it's always disappeared off the screen before you can make sense of it.

But unfortunately, the title fails on both counts. Video clips are presented in a dismembered little window while the rest of your screen plunges into blackness. There's been no attempt to weave the video into the overall production. And all the other text and figures are bunged into scrolling text windows, which might be of some use if you could copy and paste it into your word processed travel plans. But as it is, they're all ever so slightly dull and lifeless. There are some nice touches, like the 360 degree panoramas of key sites (it's okay, we're not talking Fahrenheit any more) and the Mosaic and Navigator links so you can catch up on the latest travel information, but by and large, this is no match for a decent TV show and a couple of cheap books. (MRR)

Prague has only five sightseeing spots, apparently, one of which is Bertramka Villa where Mozart wrote his opera, Don Giovanni.

A range of simple buttons on the left and annoyingly scrolling buttons on the right give access to collection of text notes.

Of course, no trip to Berlin would be complete without seeing the Wall, or what's left of it, and Checkpoint Charlie.

Most gardens won't contain such substantial water features.

It's reassuring to see an expert doing the pruning, before you get carried away with your own prize Hydrangeas.

You can't have a successful garden without the right plants. If your cactus is dying in a bog garden, expert advice is at hand.

There is nothing vulgar about this snapshot of Pulsatilla Vulgaris.

PERFECT PLANTS

Gardening has always been a polite form of warfare. Footballs fly over adjoining fences, dogs dig, and a 15-foot faux-tudor shed behind your neighbour's alpine rockery undoes hours of landscaping.

For a head start in this arms race, invest in *Perfect Plants*. A quick investigation reveals that 40 of its 2000 plants have needles – a suitably prickly hedge will scupper that dog. Pick a few of the 322 plants that grow over 5m high to starve your enemy's garden of light and choose from 137 plants to make him see red. On the chemical front, 20 plants have 'fetid or unpleasant' smelling flowers. And if the economics of war forces

cost-cutting, 28 of the 5m giants double up as needlers, with six having red flowers. No 5m high prickly red stinkers though, no doomsday weapon.

The plant searcher is the instant hit on *Perfect Plants*. It's difficult to resist looking for a small South American plant with blue flowers that loves dry conditions and blooms in spring (Neoregelia carolinae, as it turns out), even when your own backyard's a bog. You get a full screen picture of your ideal plant, tips on keeping it alive and occasionally Roger Phillips, the author, piping in with a few germane words. Some plants also link to plant care movies. For instance, did you know the time to cut back Clematis depends on the species, but the simple rule is to prune just after flowering?

We return to Roger in the six brief tours of international gardens, where the American flavour of the CD is apparent. Four of the gardens featured are American and elsewhere the gardening tips refer to US weather zones. Still, you can almost smell the London Camellia Garden wafting past, with Roger suggesting you grow Witchhazel alongside your Camellias. They provide an interesting counterpoint to the big pink and red dish flowers of the latter.

Perfect Plants succeeds in bringing the garden to your PC, and the plant searcher will help you quickly home in on your dream greens. The videos are less successful, mainly because, by necessity, they're very short. With Perfect Plants also available as a book, at around a third of the cost, you'll need to use the database searching facilities and the plant care movies extensively if you're to get value out of the disc. *(OB)*

CD REVIEW
Dig into PC Review's exclusive demo of Perfect Plants on our CD-ROM.

PC REVIEW VERDICT

A functional and attractive tool for any green-thumbed PC user, although comparatively expensive.

8

Our affable host Roger Phillips investigates an English cottage garden.

PCR Quiz

Know your Dahlias from your Dandelions? Prove it, by naming the plants below, and then bragging about your score to all your friends and family. The answers are below.
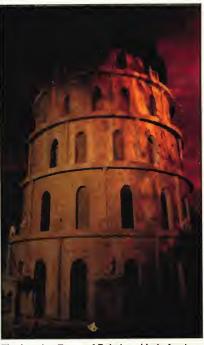
1. Fuchsia 'Voodoo' 2. Snowdrops 3. Alpine Toadflax

The Three Stooges, just waiting to be discovered. You know how it is – you wait centuries for an explorer to come along, then three turn up at once. Easter Island is one of 10 legendary locations lovingly recreated on the disc.

The Leaning Tower of Babel – a kind of out-sized language dictionary and phrase book.

MYTHS & LEGENDS 2

Lost cities - ten of them. Now that was a bit careless wasn't it? Next time put them in a safe place.
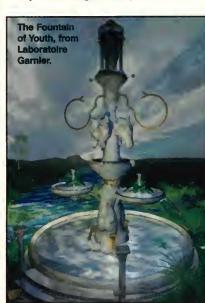
The bottom of the Bermuda Triangle, as seen from your submerged helicopter.

The Fountain of Youth, from Laboratoire Garnier.

DEVELOPER
EMME Multimedia
PUBLISHER
Koch Media
CONTACT
01420 541880
PRICE
£29.99
MINIMUM SYSTEM
486, 8Mb RAM, double speed CD-ROM drive, SVGA, mouse, Windows 95 or 3.1

Stylishly presented but slow to use and very shallow in its content.

PC REVIEW VERDICT

4

What can you say about Volume I of *Myths and Legends*? It wasn't mythical and it certainly wasn't legendary. The first in what will be a trilogy it looked at monsters and mythical beasts in a fairly stylish, but shallow fashion. Volume II sets out to continue one of these traditions, while putting the other to rest.

With the new *Lost Cities and Mythical Lands*, you begin your journey of discovery in a rather plush medieval room. A caped monk plays a suitably medieval dirge on his aged pipe organ and waxes lyrical about forgotten lands.

What follows is a very poor attempt at injecting some adventuring into the disc. You move around a rendered room through half a dozen views until you find a sextant. Click the sextant and seven numbered stone tablets appear. You need to enter a code for the map co-ordinates of your destination using the tablets. You hunt around the whole room, twirling a globe, clicking a skull (which has no effect but to produce a creepy sound effect) and then you get stuck because there's nothing else to do. You look high and low for the secret location of the codes, wasting the best part of an evening. You get totally frustrated. You find the numbers printed on the inside of the folded inlay card in the CD's jewel case. Do you laugh at the irony of it all? Do you heck.

Does he really need such a big fig leaf? Show-off.
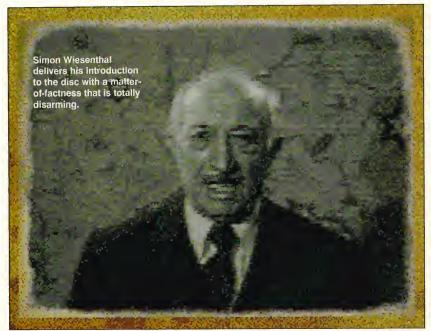
Finally the journey is underway and from here on in you can get to any of the ten locations on offer with three clicks. Each is lavishly rendered offering a kind of virtual stumble through a limited bit of scenery and a video clip introduction to the place itself, normally from a gorgeous actress who is suitably clothed for the individual locations. Naturally you head straight for the Garden of Eden, but sadly the fig leaf had been swapped for a full-length dress.
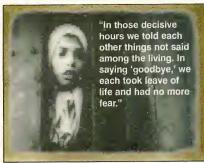
Eden is fairly typical of most of the locations on offer. There's an essay discussing the 'myth vs reality' aspects, some possible locations for the garden and some well-chosen high quality artworks. The appearance is helped by the fact that *Myths and Legends II* is brought to you in thousands of colours and zoom facilities help you to get in close and study the detail. Sadly though, while the paintings include such lovelies as *The Garden of Earthly Delights* by Hieronymus Bosch (before he went on to make spark plugs) you're not told what you're looking at, so you won't know unless you knew already.

This is a very pretty package and there's some useful and detailed information as well. But unfortunately it only covers 10 locations, which might leave you feeling a little short-changed. Especially when other discs, like FlagTower's *Unexplained* (reviewed last month) give you so much more. **(MRR)**

Simon Wiesenthal delivers his introduction to the disc with a matter-of-factness that is totally disarming.

"In those decisive hours we told each other things not said among the living. In saying 'goodbye,' we each took leave of life and had no more fear."

"I'll never forget the 19th of September 1941, the day the order came to wear the Yellow Star. Though our homes were scattered all over the city, from then on each Jew carried his own ghetto with him like a snail in his shell." – from Yellow Star.

The timeline takes you unsparingly through the 12 years of appalling degradation from 1933 to 1945.

Yellow Star is, in essence, an interactive book. Here, Albert Einstein appeals to the World on behalf of freedom.

Yellow Star

"We must not only remember the dead, we must also explain what happened to them and why. Only in that way can we keep such a disaster from ever happening again." – Simon Wiesenthal.

This is not one of those discs you rush to play with. In the comfort, ease and happiness of long summer days, submitting yourself to what you know will be a harrowing and emotionally disturbing experience seems most unattractive, obviously. And yet, with the ugly and tragic recurrence of ethnic cleansing both in Europe and Africa over the last few years, perhaps we should force ourselves to revisit the past, so we can once again be shocked by the reality of its evils.

From the beginning, the plaintive violin songs of *Yellow Star* seem to interact with your heartstrings. Simon Wiesenthal, a survivor of the camps who has devoted his life to tracking down Nazi criminals, delivers his introduction in a matter of fact way that adds yet further weight to his words. He quotes Adolf Eichmann's stunningly callous response to the questions of how and why these things could have happened: "One hundred dead are a catastrophe, a million

dead are a statistic." But as Wiesenthal and others have said, "The murder of six million Jews must never be reduced to a statistic.

The Final Solution, or Endlosung, was being talked about as early as the turn of the century. But at that time, plans were limited to deporting Jews or placing them in segregated reservations. But it wasn't for another 30 years until the hatred fostered by the Nazis began to get out of hand.

In the late 1930s slogans began to appear in parks and public places saying, 'Beware of Jews and pickpockets'. Then in 1938, as the disc proclaims, Germany turned down the sinister path from which there was no return. We're told, on 9th November, on Goebbels' orders, Storm Troopers in civilian clothes lead 'spontaneous demonstrations' against Jews in Berlin and all over Germany. It was Krisstallnacht, the Night of the Broken Glass. It lasted a week. 200 synagogues and 7500 shops were set alight, 90 Jews murdered, hundreds injured, thousands

demeaned and spat upon and 26,000 Jewish men were arrested and sent to concentration camps.

But *Yellow Star* isn't only about provocative text. Video footage is used to illustrate the pages of this book. We're shown the Nazi propaganda film on Euthanasia, glamorising the and legalising the 'Law of God' under which 100,000 of Germany's 'sick' were 'put to sleep'. And as the situation descends into full-scale slaughter, the video evidence spares you nothing.
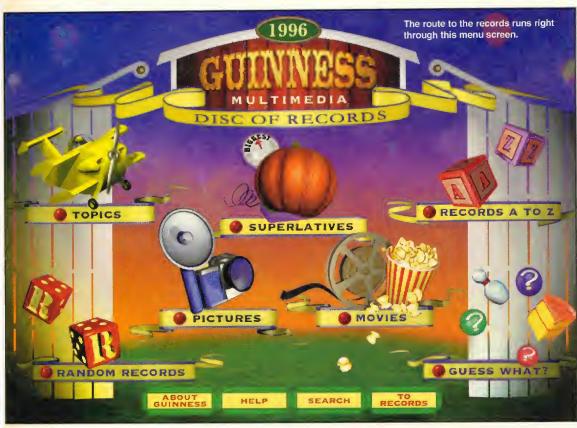
Few CD-ROMs will make you weep. On one level this is a basic multimedia production combining text, hypertext, a timeline and video clips. But almost more disturbing than the explicit scenes of cruelty and mass murder is the overwhelming sadness of watching children smile and wave as they board trains. And most disturbing of all is the way that 'ethnic cleansing' seems to have crept back into the vocabulary of the 90s, barely noticed. *(MRR)*

PC REVIEW VERDICT

This won't win any multimedia development prizes, but it's as gripping as any disc you'll see today.

7

The route to the records runs right through this menu screen.

1996 GUINNESS MULTIMEDIA DISC OF RECORDS

TOPICS
SUPERLATIVES
RECORDS A TO Z
PICTURES
MOVIES
RANDOM RECORDS
GUESS WHAT?
ABOUT GUINNESS HELP SEARCH TO RECORDS

This man spent the good part of a year doing press-ups – obviously he is the world's glutton for punishment champ.

Want to challenge for that milk bottle balancing record? Dedication and a copy of this disc based on the best selling Guinness tome are what you need.

GUINNESS MULTIMEDIA

The official world tree climbing record, and not a grizzly bear in sight.

Have you seen the state of this person's nose?

Alright, you've got your family *Bible*, *Roget's Thesaurus* and a well thumbed copy of a Jilly Cooper equestrian romp. What else would a self-respecting British household need on their bookshelf? A trivia-packed title that's topped best seller lists for decades, perhaps? A book full of statistics as pointless as they are entertaining? No, it's not the *Wisden Cricket Almanac*, it's that ever-handy *Guinness Book of Records*.

Ever the stimulus for comments such as, 'I never knew you could get one that big,' and other fabulously clichéd innuendos, the *Guinness Book of Records* since 1955 has without doubt become an important part of our lives. From schoolchildren to those of a pensionable disposition, the book has captivated millions with its list of limits, inspiring many to push back the boundaries of possibility themselves. Indeed, it's currently

the second best selling book in the world. Many of us have surely spent large portions of our formative years absorbing the facts contained within like the true height of the world's tallest man, the fastest animal, the most distant known planet, etc.

Taking advantage of the possibilities that multimedia offers, the perennial hardback has made the natural transition to the PC. So how does it fare, you ask? First impressions are that the book has benefited from the adaptation to the digital medium. Grolier Interactive, under license from Guinness, has done a commendable job in presenting more than 15,000 records. The graphical element is obviously a major plus compared to the book. The 60 QuickTime video clips and 1200 photographs offered are of a consistently high quality and add greatly to the aura of amazement surrounding the records themselves.
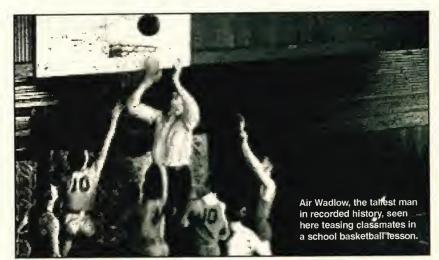
Pointless in the extreme

Stung by the record bug – this man had the largest ever mantle of bees.

Bouncy, bouncy. A unique form of transport, a wonderful way of keeping fit, an annoying and repetitive children's activity: the irreplaceable Pogo stick.

Air Wadlow, the tallest man in recorded history, seen here teasing classmates in a school basketball lesson.

DEVELOPER
Grolier Interactive
PUBLISHER
Grolier Interactive
CONTACT
01865 245770
PRICE
£24.99
MINIMUM SYSTEM
486, 8Mb RAM,
Windows 3.1 or 95,
double speed CD drive

Here's a man who's gotta lotta bottle – holder of eight world records, Ashrita Furman.

The game is called Guess What? and a lot of guessing you will be doing too.

A useful randomising facility is available should you just wish to browse aimlessly.

PC REVIEW VERDICT

An addictive, trivia-packed reference work that positively yearns to be browsed. Great presentation.

8

DISC OF RECORDS

Then there's your ability to find a record through a number of search facilities – a great bonus. The front end of the program, the Features screen, lets you to find records alphabetically, through the Word Search facility (including Boolean logical operators 'and', 'or' and 'not'), by topic (through a process of sub-categorisation), and by means of superlatives like 'fastest' and 'smallest'. For those unwilling to expend any mental energy trawling through categories there is also the Random Record Explorer where illustrated records are presented in no particular order to the user's own specified reading rate. The process at times seems hypnotic and highly addictive but should you wish to remove yourself from the reverie you may stop to analyse a record in more detail when one piques your curiosity.

In order to check that the trivia is firmly embedded in your memory you also have the option to play a rather demotivating quiz called Guess What?. This would have been an enjoyable pursuit if, for example, you had the option of choosing your answer from a number of alternatives. Come on, most of us only know a few sporting records and the odd fantastic feat. "How many people brought the longest dancing dragon to life?" is way outside the realms of normal peripheral knowledge. As it is you merely have to guess to yourself, whispering it to the ether, before admitting your stupidity when the answer is revealed. The quiz is no more than an exercise in frustration that could have been improved by offering the player at least some chance of success.

Another minor criticism about the *Disc of Records* is that it doesn't give the user the option to update records over the years as and when they are broken. Other multimedia releases provide a facility to download information from Web sites, why not this one? It seems a shame that ten years from now many of the records will have been usurped. This provision could surely have prevented the feeling of redundancy that plagues old copies of the hardback. Still, at £24.99, one can hardly quibble. Inevitable obsolescence it shall be.

Shortcomings aside, *The Guinness Disc of Records* is a solid release representing good value for money. Its appeal is wide and there is enough information to keep most users interested for a considerable period of time. You never know, you might find one record in there that you feel you can beat. If you do think you're made of the right stuff however, just remember, when you're patiently fitting the front forks to what you hope to be the world's smallest bicycle, there's one thing that every record breaker needs, and that's dedication. *(JT)*

HUNGRY?
Here's a stomach-churning record for you: "The largest item on any menu in the world is roasted camel, prepared occasionally for Bedouin wedding feats. Cooked eggs are stuffed into fish, the fish stuffed into cooked chickens, the chickens stuffed into a roasted sheep's carcass and the sheep stuffed into a whole camel." Information courtesy of Guinness Publishing Ltd.
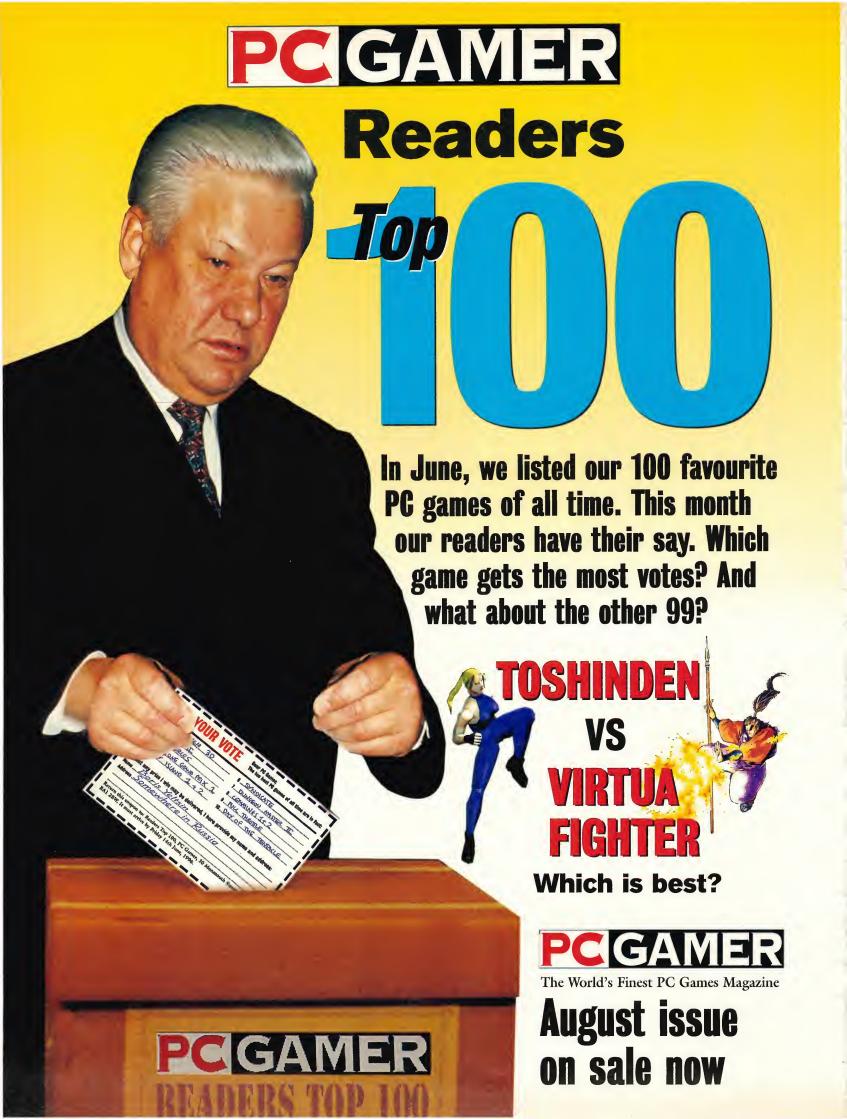
Fast Eddy McDonald – the undisputed king of Quick Draw Yo-Yo showdowns. Don't follow him into a dark alley without your tool.

The world's tallest bar. Home of the world's tallest bartender perhaps?

Plug your ears, it's the loudest scream ever recorded. Looks as though he sat on the world's largest drawing pin. Yikes.

3D STUDIO MAX

The world's most popular 3D package has just got even better. We cast a critical eye over it to see what's new.

One of the new features is volumetric lighting, which is perfectly used to create the light rays in this scene. Note the Jumanji-esque rhino in the background.

CONTENTS

At almost £3000, nobody could ever accuse *3D Studio* of being cheap. Yet for the professional user, it provides features that more than justify its jefty price tag. It seems there's almost no area of commercial graphics where the program is not used, from TV adverts to games, from giant billboard posters to multimedia animations.

The previous version was entirely DOS-based, so the interface lacked some of the benefits Windows offers, and some of the disadvantages too. Chief among the drawbacks, is Windows' instability. To overcome that, *Autodesk* has opted to design the program for Windows NT only. NT is the hyper-stable, work-station and version of Windows which costs upwards of £250, and is designed never to crash. In truth, *3D Studio Max* will also run under Windows 95, but Autodesk doesn't recommend it in that environment.

Anyway, compatibility issues aside, *3D Studio Max* is a mammoth piece of work. Rather than simply porting over a version from another machine, *Autodesk* has completely rewritten the program from scratch, adding a host of new features and, unfortunately, removing some valuable ones as well.

The interface is a dream. You'd think that a program with so many options and such functionality would be monstrously overcrowded with menus and buttons making it difficult to navigate. But skillful object-oriented design means that there are rarely many more controls visible than are needed to achieve the tasks at hand. It's true that you're not exactly going to figure everything out just by looking at it, but after very little time indeed it's easy to work out what menu options need to be used in order to achieve the results you're after. ▶

THE CHANGING LANGUAGE OF 3D

The language of technology is constantly changing to reflect improvements and modifications in the processes available. A few years ago, bump-mapping and texture mapping were all the rage, then came hierarchic animation. Nowadays, such features are taken for granted in even the least expensive programs. The latest buzz-phrase is 'Inverse Kinematics'. This is extension of hierarchic animation in which the animator defines linkages between laddered objects, and all parts of the of the hierarchy move realistically when a single object in the group is moved. Another new one is 'Volumetrics'. This is applied to describe lighting or fog, which are physical objects whose density and shape may be modified as the animation rolls.

Just how elaborate do you want to get? 3D Studio Max can probably do it, as shown in this extremely detailed museum rendering.

Buddhists have Shangrila, animators and special effects designer have 3D Studio Max. Simple.

Most budget programs place their emphasis upon object manipulation, while modelling, if available at all, seems to be included as a compulsory set piece, rather than as part of any desire to provide you with a competent set of modelling tools. With *3D Studio Max*, nothing could be further from the truth, and object modelling is assigned the priority it deserves in a professional tool kit. After all, once you get to this level you won't be content using other people's predefined objects. You'll want the tools to make the most complex objects for yourself.

In the menus, object creation is given pride of place. The first two menus enable you to build primitives (shapes like cubes, spheres, cones, etc.), and splines (complex curve-based shapes). These are the just the beginning of the object creation process, and it's the Modify, rather than the Creation menu where the interesting stuff really starts to happen. As its name suggests, it has options to reshape, combine and otherwise alter your basic shapes. But there's much more to it than that. Basic shapes are often merely used as bounding boxes which define or limit more complex operations. A rectangle may appear to be just a box, but it could just as easily be used as the origin of a fractal landscape or a snow storm.

For animators, *3D Studio Max* couldn't be simpler. Just about every part of a model or scene can be animated – there's even a snowstorm/star-field/rain effect. This, coupled with the wind/black hole/repulsion tool can be used to create atmospheric effects of great complexity and realism. Of course, that's the more glamorous side of animation, but the day-to-day business of moving things is well supported too. The program uses the key frame system, whereby you only define where things start from, where they've moved to and what they look like. *Studio* will then calculate any intermediate frames for you. This applies not only to object locations, but their surface properties, shape, scene lighting and far more besides.

Infinite command history

One of the real beauties of the program is the way it maintains a permanent record of every creative action in the construction of both objects and scenes. Multiple undos are just part of it, and such functions are

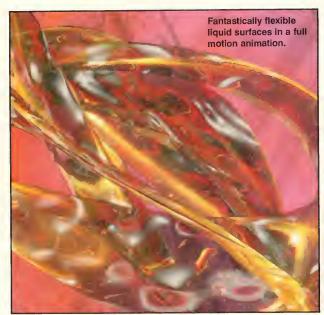## For animators, 3D Studio Max couldn't be simpler.
Just about every part of a model or scene can be animated.

A gallery in the Studio. Once again a heavily atmospheric rendering is created in 3D Studio Max. Note the chiaroscuro effect on the statue's back and the TV's reflection on the marble floor.

With gorgeous textures like these, none of the cheaper programs come close to Studio.

Fantastically flexible liquid surfaces in a full motion animation.

Remarkable haze and light sourcing effects can be used to create almost any atmosphere.

The developer's logo taken to the Max.

You might use 3D Studio Max to design packaging – like these milk cartons for instance. Glug.

common in all decent programs from word processors to drawing packages. *Max* takes things further. You can return to any stage of the creative process and alter it, leaving other stages unchanged. For instance, if you've built a chess piece based upon a lathed 2D profile, then texture mapped and animated it, you can go back and alter its profile. The 3D result will look different, but the surface material remains the same. Such flexibility encourages you to experiment, safe in the knowledge that you have twice the security, should you make mistakes.

Because *3D Studio* is designed for professional use where longer animations are needed, it offers the option to utilise all processor power available, facilitating the construction of render farms dedicated to the output of 3D frames. If you're lucky enough to own a dual processor PC, the program will distribute rendering tasks to each of the processors, so that the job will be done that

much quicker. Similarly, if you're operating on a 100 OC network, *Max* can utilise every single processor available.

Old plug-ins don't work
The original program was designed to use plug-ins, which acted as extension modules, adding further specialised features, which were often written and sold by third-party software companies. This facility was widely used, especially in the animation community. Dozens, even hundreds, of additional and often expensive plug-ins were produced. Though *Max* also supports plug-ins, none of the previous ones will work with this version. This is unfortunate. Whether that's a design limitation from moving from 16-bit to 32-bit architecture, or even a deliberate attempt to recreate new markets, it's hard to tell, but in so doing, Autodesk has added major food for thought to any would-be upgraders' considerations, as they see thousands of

pounds worth of tools become obsolete overnight. By way of meagre compensation, this version supports a new technology called Core Components, which integrates with it to a much greater extent. Rather than acting as add-ons, dangling from the outside of the program as plug-ins do, core components seamlessly merge with the existing interface, so that they appear as integrated features.

As you'd expect from a program of such huge power and flexibility, it's more than a little hungry for system resources. Despite the fact that it's supplied on CD-ROM, it needs at least 60Mb of hard drive space, and a hefty 32Mb of RAM, although 64 to 128Mb is the recommended figure! Because it's a 32-bit application, it works surprisingly quickly, even on 486 machines, but the processor intensive nature of professional 3D animation means that a decent Pentium is something of a must. *(MB)*
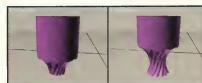
PC REVIEW VERDICT
3D Studio has become more friendly, and the new features enable you to create even better work.

9
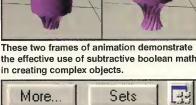
These two frames of animation demonstrate the effective use of subtractive boolean maths in creating complex objects.

More...	Sets	
Bend	Taper
Twist	Noise
Extrude	Lathe
UVW Map	Edit Patch
Edit Mesh	Edit Spline

The Modifiers palette is huge, and its content varies according to the type of object that's currently selected.

Making dolphins swim convincinly is a true test for any 3D animation package. Nice.

POST-PRODUCTION TIME SAVER *When using 3D programs for film, studios would generally send animation off to post-production bureaux which perform a number of processes, ranging from frame-by-frame editing, to layered compositing. Now 3D Studio owners are saved even that expense, thanks to the program's extensive variety of post-production options. These include precise colour control, the application of filters and effects, multi-camera cross-fading, and far more.*

Your PC is vulnerable to a barrage of viruses, and unless you protect yourself, you could lose everything. We evaluate three top anti-virus programs to see how they can help.

VIRUS KILLERS!

PC-Cillin 95

DEVELOPER **Touchstone**
PUBLISHER **Roderick Manhattan**
CONTACT **0181 875 4400**
PRICE **£49.95**
MINIMUM SYSTEM **386, 4Mb, Windows 3.1, 4Mb hard disk**

A comprehensive checking package at an affordable price, with free pattern updates to keep it current.

PC REViEW VERDICT **9**

It's the cheapest of the lot, but PC-Cillin has the highest of NCSA certification possible.

Norton AntiVirus

DEVELOPER **Symantec**
PUBLISHER **Symantec**
CONTACT **01628 788580**
PRICE **£92.83**
MINIMUM SYSTEM **386, 4Mb, Windows 95, 6Mb hard disk**

Modest in its detection rate claims, but nonetheless easy to use, and very capable

PC REViEW VERDICT **8**

Although it doesn't have the same level of certification as PC-Cillin, Norton comes with free BBS updates each month.

Norton Anti-Virus is both quick and efficient. It's also very straight-forward to use.

Dr Solomon's Anti-Virus Toolkit

DEVELOPER **Dr Solomon's**
PUBLISHER **S&S International**
CONTACT **01296 318800**
PRICE **£146.88**
MINIMUM SYSTEM **386, 4Mb, Windows 3.1, 4Mb hard disk**

Intelligent detection of polymorphic viruses, but too expensive and updates are too infrequent.

PC REViEW VERDICT **7**

Here's Dr Solomon's WinGuard in action, keeping a constant eye on all computer and file activity.

Dr Solomon's FileGuard shows that getting anti-virus software can be money well spent.

Disreputable insurance salesmen often try to sell their products by using worst-case scenarios to highlight your need for protection. Applying the same methodology to anti-virus software, you could lose all of your data, and your hard drive could be permanently damaged by many of the 9000 plus viruses out there. Although the software companies freely admit that you'll never encounter most of them, you only need to encounter one to lose everything. Sceptical though *PC Review* is of scare tactics, while testing these packages, we discovered no less than five different viruses hidden away in files on a reader's PC.

Fortunately, because they were all secreted within executable files that had never been run, or compressed files that hadn't been unpacked, no damage was done. Still, even on well-maintained computers a constant threat exists. For your information the *CD Review* cover disc is checked by the University of Bradford's Computer Virus Certification Centre – and nothing gets past them.

You can think of viruses as electronic saboteurs. Some of them charge in guns blazing, trying to slaughter everything in reach. Others tried to sneak in stealthily via the back door. Some try to and bully their way onto your system with no attempt at concealment and others come in disguise, dressed up as friends, or hidden among the invited guests. The job of an anti-virus program is to detect all these kinds of intruder. Like a bouncer, it watches the door and tries to stop undesirables from entering. If they do somehow sneak in, it's the program's job to eject them.

All three programs here do these jobs perfectly well. They use TSR (terminate and stay resident) programs loaded via the AUTOEXEC.BAT file, to check data on your machine. *Norton* and *Dr Solomon's* monitor files copied to your machine, but only *PC-Cillin* can screen UUencoded email attachments too. However, the first two use VxD programs under Windows 95, which require no conventional memory, and are therefore able to perform more comprehensive background scanning of file activity.

Still, detecting viruses as you try to run infected files is just one area of possible anti-virus activity. Another very powerful safety net is provided when you perform a file scan. So, you tell the program to scan all files in a directory or on a hard drive to check for the tell-tale signs of a virus. There are many types of virus, but self-modifying polymorphic ones are the most dangerous. Not only are they hard to detect, but each time they duplicate themselves, they change their appearance, making them masters of disguise.

All three programs use detection systems that look for virus-like activity to find polymorphic viruses. This can result in a lot of false alarms, but *Dr Solomon's* claims that while it manages an 80 per cent detection rate of new polymorphic viruses, it never incorrectly diagnoses safe programs as viruses. *Norton* is more realistic about its claims, but was reluctant to be tied down to specific figures. *PC-Cillin* is surprisingly modest about its abilities, yet it has just been granted top level certification by the National Computer Security Association. To earn this approval, software must detect at least 90 per cent of all new viruses. To be fair, *Norton's* software also has NCSA approval, but it's the older, less demanding certification.

All three programs seem to work well. Norton is friendly in action, and *PC-Cillin* is easy to install, while *Dr Solomon's* won't be needlessly scaring you every ten seconds. However, the latter program does not come with free virus recognition upgrades beyond the first year, and even in the first year it only comes out quarterly. The other two have free monthly upgrades available to anyone with a modem. *PC-Cillin* must win, if only in terms of price and completeness, but the others are only a whisker behind. *(MB)*

Virus found. Select Help to view removal procedures.

The Jaz is available in both internal and external designs.

Software is used to write protect disks because there is no way of doing this on the hardware itself.

IOMEGA JAZ DRIVE

With the price of storage in freefall Iomega's latest medium claims to makes mass storage cheap and easy, but is the Jaz really the last word in disk drives?

A few years ago the idea of having a 1Gb drive inside a PC was reserved for professionals. Nowadays most new machines are shipped with them and you now have the choice of adding a peripheral which uses 1Gb removable disks. The Jaz drive certainly has impressive specifications, but with technology still advancing fast, there is some question over its long term use.

The drive comes as either an internal or external unit. As it's a SCSI device, it is simplicity itself to fit. External ones just need connecting, while internals come with mounting units so they can fit into 3.5- or 5.25-inch bays. Obviously, it needs to be one with external access. Connect the power and SCSI ribbon and you are away.

The Jaz is Windows 95 compatible so it's as plug and play as they come. You can add it by sitting through the Add new Hardware procedure, the drive comes with a floppy disk containing Guest 95, a program that scans quickly for Iomega removable devices. In all, you should have the whole thing fitted and running within ten minutes.

Once installed you can get at the software which comes on the Jaz disk. This includes a tour of the drive, which is a bit pointless as it's all very obvious. More important is the installation of the *Jaz Tools*. These are tools that can be accessed by right clicking over the drive's icon. They cover software write or read/write protection of the disk, which is necessary as

there is no security tab on the disks like there is on floppies. They also allow you to make a disk non-removable which you might need to do to run some software that doesn't like removable devices, although we didn't come across any. The *Tools* also include a utility for copying complete disks.

The disks can be bought in both 1Gb and 500Mb capacity, although once you've deleted a lot of junk that is on the *Jaz Tools* disk, like the tour and a CD demo, you shouldn't need to buy one for a while. This is the Jaz's downfall. It's a little too good, especially for normal users. If you've got a fast SCSI card, then you'd believe that you were using a normal hard drive, but one that you can eject and swap over at any time. However, when are you likely to need to swap disks?

Your internal 1Gb hard drive fills up quickly when you start out because you install office suites, games and the like. After that, you'd have to be involved in video or audio work to continue filling up whole gigabyte disk. If you've just run out of space, then a cheap second IDE drive would probably be better suited and much more economical.

If you do a lot of storage intensive work, then the Jaz offers you this infinite upgrade path. But you'll probably only find it suitable to your needs if you regularly have to transport your data between compatible machines. *(OB)*

The tour tells you how great the Jaz is – something you'll be glad to see after spending £400 on it.

Other information given by the Jaz Tour is where to find the eject button. Handy when you want the disk back.

PC REVIEW VERDICT

A gorgeous product, but expect many further developments in this area.

8

Dual cooling fan

Although the summer's rather later in coming this year, millions of pounds worth of data, and thousands of man hours worth of work will be lost due to heat damaged computers. You probably think to yourself, 'Oh my system doesn't get that hot.' You may even think that the processor's the only bit that gets hot in the first place, but in both cases, you're wrong.

Pentium processors give off a huge amount of heat, and in the early days it wasn't uncommon to hear about them getting hot enough to melt the motherboard. The immediate solution to that problem is to add a heat sink to the chip if it doesn't have one, and attach a fan to it, if it does.

However, the problems don't end there. The other boards in your system, and especially your hard drives, all generate a lot of heat. If you have lots of hard drives stacked on top of each other, or cards in most motherboard slots, there's every chance that you'll encounter some sort of problems when the weather gets hot. The short term

If your computer seems to be locking up inexplicably, perhaps it's overheating. Maybe you need to take this fan for a spin.

solution is to open your case, and leave it open during the hot weather, but a more elegant fix comes in the form of this excellent fan card from Stak.

The card is simplicity itself to fit, and it doesn't require a motherboard slot, although it does take a tiny amount of power from your PSU. Plug it in amongst your cards, and it works exactly like a small extractor fan, sucking hot air straight out of your computer, and promoting air flow. Brilliant, simple and top value too. *(MB)*

DEVELOPER
Stak Trading
PUBLISHER
Stak Trading
CONTACT
01788 577497
PRICE
£16.45
MINIMUM SYSTEM
A spare motherboard slot of any type.

PC REVIEW VERDICT
This fan is so cheap it should be a standard component! A potential life-saver if the weather's hot.
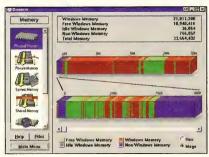
9

Hurricane 2

Even on a computer with 32Mb of memory, the program improves overall performance by optimising the way Windows works.

RAM doubling software has got rather a bad name since the *SoftRAM* debacle, in which thousands of people bought useless software that made, and appeared to live up to, claims that in fact it simply was not capable of. *Hurricane* is another RAM management program, but it's more conservative in its claims. It works with both Windows 3.1 and Windows 95, but under 95, it has an extra program that truly does attempt to double RAM in certain circumstances.

The package consists of multiple program modules, and you can choose which ones to activate, and which to leave dormant. *RAM Expander* is the important module if you're purely after more working RAM for increased multi-tasking efficiency and so forth. It's the bit that tries to double your memory and in so doing improves your

machine's overall performance by reducing virtual memory hits. Helix does concede that it's not simply a matter of compressing ordinary memory, and saying, 'There you go, twice the RAM.' There are certain types of application that don't respond well to RAM

doubling, particular those involving graphics.

Another interesting module is WinPack, which enables you to minimise inactive programs in such a way that most of their memory resources are returned to the system for re-allocation. This is an intermediate step, short of simply closing the programs down altogether.

Whilst *Hurricane* did provide modest gains, even on machines with lots of RAM, it had a tendency to crash, which appears to be due to a conflict with either a memory resident virus killer or an install monitor, both of which are common programs. *(MB)*

Hurricane is the latest attempt at increasing the amount of RAM available to Windows users. Graphs break down memory use.

There's more to Hurricane than mere RAM compression. It improves many other areas including print spooling and disk caching.

DEVELOPER
Helix Software
PUBLISHER
Roderick Manhattan
CONTACT
0181 875 4400
PRICE
£49.95
MINIMUM SYSTEM
386, 4Mb, Windows, 2Mb hard drive.

PC REVIEW VERDICT
It does help to optimise your system, but you can buy another 8Mb of real memory for this much money.

5

Scala can present you with a visual storyboard of the pages and events in a production. This one's from the CD.

The program boasts a wonderful browser, which lets users see thumbnails of images in a directory. Useful for when you're planning a production.

SCALA MM100

CD REViEW
Make multimedia with the Scala demo on our CD-ROM.

DEVELOPER
Scala
PUBLISHER
Scala
CONTACT
01920 484811
PRICE
£150
MINIMUM SYSTEM
486/33, DOS 5 or
Win3.1 or 95, SVGA,
8MB RAM, CD drive,
mouse, 10 Mb hard
disk space, soundcard.

Easy-to-use
multimedia
creator bristling
with effects.
Rewards out-
weigh effort.

9

PC REViEW VERDICT

Instead of interacting with someone else's multimedia, why not create your own? Scala MM100 offers you that chance...

You'll like the box *Scala* comes in. It reminds us of the *Hitch-hiker's Guide to the Galaxy* which screamed in bold, frightening letters 'Don't Panic'. There, on Scala's carton in non-frightening letters, it says: 'No programming necessary. Even the least experienced PC user can make TV quality multimedia productions in minutes.'

And it's true. Basic presentations take no time at all. It's simply a matter of clicking and pointing to answer multiple-choice type questions then seeing your ideas generate into stunning effects and transitions.

This well-designed simplicity won't surprise anyone familiar with the Amiga, which *Scala* helped establish as a serious professional graphics tool. The same kind of gentle interface and rock-solid features have translated amazingly well to the PC.

The software is supplied on a CD as well as on two floppies. To install from CD will take up between 15Mb and 600Mb. It boils down to a simple choice: run quickly from

hard disk or slowly from CD-ROM.The floppies, meanwhile, provide a quick install option, which leaves the artwork cupboard bare, but does give you a fully functioning program and plenty of drive space left.

The program works from DOS or Windows (3.1 and 95), and completely commandeers your system for it's power-hungry application. Image files, WAVs, MIDIs, CD music and FLC/FLI animations can all be imported and configured within a presentation. MPEG is also supported, but only if you have a dedicated graphics card.

Control of a running presentation is either by mouse, keyboard – including cursor control as well as hotkey actions – and there is touchscreen compatibility, if you have the hardware. There's even a stand-alone utility to convert TrueType fonts for internal use within the program.

Though this isn't meant to be an animation program per se, you'd be hard-pressed to guess it; the use of FLIs and over

200 screen wipes and fades conjure up some stunning animated effects. And all this happens full screen in the mode of your choice; none of those stamp-sized windows some multi-media packages offer. This is serious broadcast quality, and double-buffered for smoothness.

Probably the hardest concept to grasp initially is button definition. While *Scala* simplifies most things, a degree of logical planning is needed to make the program do exactly what you want. That said, the murky world of variables and branching has never looked friendlier. Control of a presentation is through a text-based script, generated auto-matically by *Scala*. Fools or heroes can edit this themselves if required! Others will be happy to stick to the graphical front end.

The interface, on-line help and manual and special effects are really well designed, and the quality of output is high enough to make even a hardened Amiga owner see the light. *(PL)*

The moving finger writes

1 A stock background from the Scala CD is loaded, and text entered with outline and shadow styles. The message will appear over the image using one of the 200 or so transitions available. Here, we've chosen to use a soft diagonal wipe.

2 Any graphic or text item can be turned into a button hotspot, which can be made to launch an event when it is clicked. Here are some professional-looking sample boxes which come with the program and which make super buttons.

3 Our second page will have an FLC animation, from the CD. The text wipes in as if she is typing it, spelling out the message, and the button (mid right) is being defined. A variable called PCREV has been created with text output in quotes.

4 And just to prove that it works, here is the final scene from the production after the button is clicked. You can't see it, but a MIDI file plays throughout. Scala also lets you play WAV files and CD music for a higher quality audio accompaniment.

Q&A

Experts? We are indeed. The next four pages will solve your problems and hopefully help you squeeze that extra bit of efficiency out our your home PC. Top tips abound so read on.

Got a problem you just can't fix? Well, write it down on a piece of paper and send it in to Helpline, PC REVIEW, 30 Monmouth Street, Bath, BA1 2BW. We'll try to solve it.

WINDOWS

WHY IS IT SO SLOW?

Q The problem I have is quite puzzling. My PC is a P133 with 16Mb EDORAM, 2Mb VRAM video card and a 1.6Gb compressed hard disk. It takes anything from 45 seconds to a minute to load Windows 95. A friend of mine gets his copy to load in 12 seconds. What am I doing wrong?

A After a look round all the machines in this and the surrounding offices, together with messages left on various Win95 newsgroups, it seems that most people's machines really do take an age to boot. Those who manage to get them to boot much more quickly don't seem to know why. In many cases the hardware is comparable, so there don't seem to be any obvious hardware related performance issues to worry about here.

Two things to look at might be the speed of your hard disk – obviously a compressed hard disk is going to be slower than an uncompressed one – and the number of applications you have in your taskbar. According to one rumour the number of installed fonts makes a difference as well, as do some printer driver routines which take a while to check if the printer is connected.

But the short and honest answer is – we don't know. People who have speedy boot times are rather like the Loch Ness monster – rumours abound, but we've yet to meet one in person. If any readers can shed some light on this mystery we'll print the details in a future column.

Windows tip of the month

SECURITY IN LEGACY WINDOWS

Anyone who works in an office or shares a house can find themselves in a situation where they need to protect data held on their PC from prying eyes. Believe it or not, with a little fiddling about, you can use a screensaver as a security device. Here's an interesting series of tips for Windows 3.x from Richard Ashley of Warrington that make it easy to do just that…

Firstly, you have to set up a screensaver so it can be run as an ordinary application. In the WIN.INI file find the line that says:

```
Programs=com exe bat pif
```

and add scr (the screensaver file type suffix) to the list. Next, add the various screensaver .SCR files to a program group within Program Manager. All the screensavers have icons, which makes this easy. Finally, change the command line (using the File/Properties menu item) by adding /s to the end of the line. Now the screen saver will run immediately when you doubleclick on it.

Next, go into the Contol Panel and add a password to the screensaver you have just moved. Then drag the screensaver's icon to the Start Up group. Now, when you boot Windows the screensaver will run immediately, and you won't be able to get into Windows without knowing the password. And if you have to leave your desk for any reason, you can run the screensaver by hand with the same result. That will keep nosey workmates out of your business.

For added security, you can set up **PROGRAM.INI** to make it impossible for people to do certain things on your PC. Add a restrictions category at the end of the file and use some or all of the following settings:

Windows 3.11 users can employ the Primordial Life screensaver on CD Review as a security device.

```
Edit Level =1  . . .Can't create, delete or rename
                    groups
           2  . . .or program items
           3  . . .or command lines
           4  . . .or any changes at all

No Run =   1 . . .disables File/Run
No File Menu =1  removes the File menu completely
No Close =1 . . . .can't close Program Manager
No Save Settings = 1  doesn't save settings on exit
```

Your Windows 3.x system is now safe.

Absolute Beginners

Q What is this clipboard I keep seeing everywhere? What can I do with it?

A The clipboard is one of the most useful tiny applets available in Windows. It gives you a way of getting information from one application to another without having to save it as a separate file and load it again.

You can store anything you like on the clipboard – text, sounds, graphics, whatever. The features to watch for are cut, copy and paste options, which usually appear under an Edit menu. There are also keyboard shortcuts to

make life quicker and easier. Here, as an example, is how to get a Web page address (uniform resource locator, URL) out of an email and into a Web browser without needing to retype it by hand.

Start by highlighting the URL with the mouse. To do this move the cursor to the start of the URL, then drag the mouse across while holding the left button down. Now hit the [Ctrl] key and [C] at the same time to copy the URL to the clipboard.

Now, within your browser, highlight the existing URL, hit the delete key and then [Ctrl] and [V] together. The new URL appears, and you can click on OK to start a search for it.

From this email…

…to this Web page, with URL copied by way of the clip board, and not typing.

LOST POINTER

If you own a laptop and you find the mouse pointer disappears when you move it because the display can't keep up, Windows 95 includes a mouse trails feature which can help solve the problem. Click on Settings, then Control Panel, then Mouse. Select motion and you'll see the dialogue box appear. Click on Mouse Trails and the mouse will leave a trail of old images when you move it, making it easier to find.

RESOURCE TRACKING

Q Is there any way to see what Windows 95 is doing? I know there's the system monitor, but it doesn't seem to tell me much about what I want to know.

The Windows 95 System Monitor keeps its finger on the pulse of your PC. You can use it to learn about Windows.

A The System Monitor applet can actually give you a complete picture of what's happening inside Windows 95 on your PC. The default settings, however, aren't up to much, so you'll need to tweak them first.

On most systems, the System Monitor isn't installed at all. If this is the case, your first step will obviously be to run Add/Remove Programs on the Windows 95 disc, and make sure it's included in the Accessories section.

Next, select Add Item under Edit. Items are divided into three groups. Pick one – Memory Manager, for example – and a list of options should appear. If you select one or more of these they'll show up as bar graph values that change as you work with your PC. The same applies for the settings in the other groups.

But what do they mean? Each item comes with a brief explanation that tells you what it's for. You'll need to know a little about how Windows 95 works internally to understand these options, but if you know what you're doing System Monitor can be a comprehensive diagnostic tool for your setup.

HARDWARE

FLOPPY PROBLEMS

Q I recently bought a new PC, and now I get regular floppy disk errors. Is there anything I can do to sort these out without sending the whole machine back to the shop? It was a mail order deal, and the shop is miles away.

A If a floppy is very slightly damaged, you can sometimes get the information that was on it back by running defrag on it. Defrag works just as well on floppy disks as on hard ones. On a floppy it copies damaged data to another disk block. If the data can be salvaged, defrag will do it. If it's beyond repair then defrag will have a go at copying the data anyway, but you'll get garbage in the new block.

Temporary measures aside, you can tell whether or not you have a dodgy floppy drive by listening to it. If it goes clunk-WHIRR, clunk-WHIRR in a regular rhythm and frequently comes up with damaged disk errors then you can be sure something is seriously awry. Floppies aren't the most reliable data storage medium, but in practice you shouldn't get more than two or three serious errors a year and these usually won't be the fault of the drive itself. If you're getting this error every week, however, your drive is definitely in need of attention.

If you don't want to send the whole PC back, I'd suggest telling your dealer what the situation is and getting them to send you a replacement drive. Floppy drives are actually very easy to fit. Mechanically they are held in with side screws in the cage that holds all the drives. To start your transplant, undo these and put them in a safe place. Next, note which way round the connectors are. There are two – power and data – and the cables will always have some

Not all mice are made equal, when it comes to the grubby ball stakes.

STRANGE FILES

Looking in your DOS directory, there likely to be are lots of files with cryptic names such as ~SRC0808.TMP. Some of these files may be quite big. These .TMP files are the notes that DOS keeps for itself whenever you use certain applications. You're unlikely to do any damage if you get rid of them, but just to be sure it's a good idea to get rid of the older ones rather than the newer ones. Anything that's more than a month old should be passed its sell by date now and it should be safe to get rid of it.

DOS
Fixed files?

Q When running defrag I find a big chunk of my hard disk marked immovable, and doesn't seem to be accessible at all. Defrag leaves it alone and seems to work around it. Is this a fault on my hard drive, or is something wrong with defrag?

A Neither. What you've got there is none other than the Windows swap file, which by its nature shouldn't be moved once it has been created. So there's nothing wrong with either your hard disk or your version of defrag – it's just that DOS treats the swap file as an untouchable disk area. In Windows 3.11 you can change the size of this area by hand in the EM386 box in the Control Panel. Windows 95 is slightly less open, and makes it very hard to control what the swap file is doing by hand. If you spend most of your time in DOS you may want to trim the swap file down to a minimum, or even get rid of it completely, as it's only used by big Windows applications.

Memory management

Q I bought my first PC games recently, but I can't get them to work on our home PC. Even though it has 16Mb of memory it keeps flashing an 'out of memory' error. Is there something wrong with it? Or am I missing something obvious? Please help – I'd love to be able to start gaming...

A It sounds very much like you're running Windows 3.1x. If that's the case, you'll probably need to run a program called Memmaker to make sure you have as much memory free as possible.

One problem with the way the PC works is that the first 640k of memory is very special. All the important applications have to squeeze in here, and if there's not enough room they won't work, no matter how much memory there is in the rest of the system.

Memmaker kicks as many of these applications into the area between 640K and 1Mb. This makes the first 640K less busy, and that means there's more of a chance that your games will squeeze in. To run Memmaker you have to be at the C:> prompt. It gets very confused indeed if you try to run it from within Windows, so if you're in Windows quit out to DOS by closing the Program Manager. Then just type memmaker.

Memmaker will ask you about various configuration options, but you'll usually find the default settings work just fine. It

kind of mark either on one of the cables or on the plug. Then just whip out the old drive, slide in the new one, reconnect the cables and tighten the screws. Your floppy will be as good as new – if not even better.

Mouse hassles

Q My mouse keeps getting gummed up. I don't eat Chinese food off the mouse mat or leave my chewing gum on it, and I clean the mouse ball regularly. But it seems to take no time at all before the pointer starts sticking again. This is annoying me – can you help?

A As it happens, not all mice are created equal. Cheaper rodents gum up more quickly, because the materials used to make them are of inferior quality. There's a tendency for the plastic and rubber in some of them to erode slowly with use. Reputable names like Logitech and Microsoft are usually a good bet, and in fact it's often a false economy to get a something slightly cheaper just to save a few pounds. Still, a good precaution against this gumming up problem is to dust your mouse mat regularly.

The best mice are optical designs which have no moving parts. These use a special mouse mat with a printed graticule. As the mouse glides over the mat the mouse hardware counts the number of lines that have been covered, and works out a position from this. Optical mice hardly ever go wrong, but they're almost impossible to find and of course you can't use your favourite mouse mat with them. Professionals swear by them though.

Missing space

Q A friend told me that hard disks always waste lots of space – so even if I write a one byte file to disk, there's actually minimum of 16k of space used to store it. This can't be true, surely? Isn't that incredibly wasteful?
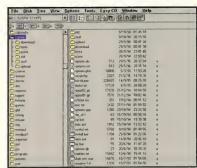
A It would be if it were a ratio of 16k to every byte. But luckily it isn't. Because it would be impossible to label every single byte on a disk individually – if disks worked that way the index would be the same size as the information – each disk is divided into blocks called clusters, which are the smallest possible unit of information.

In DOS clusters are either 16k for small disks or 32k for large disks which are over the 525Mb standard limit set in the DOS BIOS.

So it's true that if you write a single byte to a file, another 16,535 bytes are used to store it. But it's also true that if you write another byte it is stored in that area which appeared to be wasted. So in practice the wastage tends to average out at about 8k per file. With maybe a thousand files on one hard disk, this means that there's maybe 8Mb of space being wasted.

This sounds terrible, but of course the alternative is space wasted in maintaining the links and pointers needed to

Yes, it's true – every hard drive has megabytes of wasted space on it. But this is not a bad thing.

find the file. So however you arrange it, space will always be wasted. And the 16k cluster size seems like a good workable compromise.

Sounding off about speakers

Q I'd like to amplify the output of my soundcard, but don't have room on the desk for any speakers. What other options are there?

When buying speakers it's always a good idea to go for magnetically shielded ones.

A You can always plug a sound card into a hifi. Most cards have stereo mini-jacks. Ask your hifi shop for a lead that will link one of these with your amp. Your other alternative is monitor mounted speakers. These clip or slide onto brackets on each side of the monitor. They're still not as small as they could be, and the sound is often more modest than that of proper PC speakers, or indeed a good hifi system. But they will do the job. With speakers like these you have to make sure they're shielded, otherwise they'll affect the deflector coils in your monitor and could even cause lasting damage.

Finally, you could get normal speakers and just keep them on the floor under your desk. Some speakers are actually designed to sit on the floor.

VRAM and DRAM

Q. What's the difference between the VRAM, DRAM and SRAM used in video-cards, and is it worth paying the extra?
A. DRAM is standard dynamic RAM. Dynamic RAM forgets things unless it's reminded regularly – this is called refreshing the RAM, and it slows the RAM right down. VRAM is video RAM, which has a very useful feature – it can be read from and written to at the same time. It's much faster than DRAM but also much more expensive. SRAM is static RAM – as long as the power is applied, SRAM will remember whatever it's told to without refresh, which makes it much faster than DRAM.

As for whether it's worth it, that depends on what you'll be using a video card for. For ordinary Windows work then no, it probably isn't worth the extra. For time-critical rendering and animation then a fast card is well worth the extra. Otherwise, don't bother unless you're a speed demon.

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reboots twice to check the settings, and finally changes the important AUTOEXEC.BAT and CONFIG.SYS files to reflect the alterations It's made. From then on your PC will boot with as much free memory as it can manage, and your games should work with no problems.

Batch Parameters

Q I'm trying to make a batch file that deletes certain kinds of files from my hard disk. I want to be able to give the extension of the files to the batch program, but I don't see if there's any way to do this.

A All you need to do is use the replaceable parameters %1, %2 and so on. Include these in your batch file as written, and then type in the details when you run the batch file. So for example if you

want to delete all .TMP files the batch file would look like this:
```
REM BIGDEL.BAT Generic file
deletion, 27/6/96
DEL *.%1
```
and you'd run the file like this: BIGDEL TMP. If you wanted to delete another kind of file, you'd type in a different extension.

Generic file deletion is easy when you know how to pass parameters to batch files.

BIOS passwords

Most BIOS passwords are preset, so if you enable them by accident you don't have to panic or do something daft like trying to disconnect the back-up battery. All you need to know is the magic word. For the AMI BIOS the password is AMI, and for the Award BIOS it's BIOSTAR. Phoenix and Microid BIOSes won't enable the password feature unless you type a password in. In general though, there's very little point turning this option on unless you have super-bright and inquisitive children around, or you work in the kind of office where you can get back from a lunch break to discover that someone has reformatted your hard disk for a laugh.

MIXED BAG

MODEM SETTINGS EXPLAINED

Q My modem is a Motorola 3400 28.8k, but the *Turnpike* software I'm using has an extra box for connection speed which doesn't mention 28.8k – the nearest numbers are 19200 and 38400. Which setting should I use? And why isn't 28.8k mentioned anywhere? I'm totally confused.

A There are actually three numbers that matter when using a modem. The first is the nominal connection speed across a phone line represented by the numbers most commonly associated with modems – 9600, 14.4k, 28.8k and so on. This is the maximum speed at which the modem can send and receive information when it's connected to a remote computer. Now obviously, the modem has to connect to the local computer as well, and that's where these other numbers come in – they set the speed at which information is passed to and from your PC.

In the early days of modems these two numbers were always the same. But as modems got cleverer, this uncomplicated situation changed. All modern modems include data compression, which basically means they compress information on the fly – it's a bit like having a file zipped and then unzipped automatically as it goes from one machine to the another. This means the effective transfer rate down the phone line can be much higher than the nominal 28.8k, 14.4k or whatever. With a good line and certain kinds of data you can get a transfer rate of over 100k out of a 28.8k modem.

The best setting to use is the highest one you can get away with. If it's too high, you may start getting errors. But start with the 115,200 speed anyway, and then if there are problems take it down a notch or two – that way you'll be guaranteed the highest speed your hardware can handle.

Most software lets you send modem to PC connect speeds to squeeze every last bit of speed out a modem connection. Here's how to do it with Turnpike's Internet suite.

WHAT'S MIDI?

Q My PC came fitted with a SoundBlaster 16 soundcard. I believe it's possible to hook up a piano-type keyboard to a PC using this soundcard and something called MIDI.

Can you explain how this works and what I could do with it? I'm a piano player who wants to go digital with my new PC.

A MIDI is short for Musical Instruments Digital Interface. It is a remote control option that's fitted to most modern electronic musical instruments. With MIDI you can play one keyboard, connect another and have both playing at the same time. Or you can control a collection of keyboards, drum machines and other digital instruments from your PC. To use MIDI you'll need a special adaptor plug for your soundcard. This should plug into the multipin joystick port on the back and adds a couple of 5-pin round connectors, the kind that are standard for the MIDI system.

Now you can add your piano type keyboard – the Evolution MK-1 is a good, affordable choice, and comes with some suitable software – and play music into your PC. The sounds in your soundcard are very basic, so you may want to add a plug-in daughterboard, such as the excellent Yamaha DB50XG to give yourself much better sounds. Or you may go the whole hog and buy a separate MIDI module, which would have sounds that are better still, but is a much more expensive option. Prices start from around £200 and go up to over £5000.

HOW RAPID IS RAPID?

Q I'm looking for a PC to use for word processing and maybe some basic accounts, and I can't help wondering if I really need a Pentium machine? Will a fast 486 do? Will it be fast enough for Windows 95?

A The plain fact is that very few people need a Pentium. Unless you're a dedicated games player – games are actually the most demanding of PC applications – you could get by with an old DOS/386 machine. This is especially true for the kind of light office work you appear to have in mind.

The problem is, there's almost no one around today who will sell you a DOS 386 machine. In fact, you'll be hard pressed to find a 486. So here are your options…

Firstly, you could pick up a copy of *Micro Mart*, which lists thousands of second hand computers and other bargains. The problem with buying second hand is that you won't get any support and servicing can be tricky. You should also buy on a what you see is what you get basis – it can be much harder to upgrade an older machine than a new one. But if you can find something you like you'll be able to save yourself some money.

Alternatively, you can bite the bullet and get a modern Pentium. This will be fast enough and expandable enough for almost anything, and it will be able to run the latest software. But it won't be nearly as cheap. For your needs something like a

P90 would be perfect – fast enough to do the job, but still cheap enough to be affordable. If you look around you should be able to get a P75 from one of the major retailers at just over £1000. A top tip if you're buying a machine with pre-installed software is to make sure you get discs containing the software as well.

Finally, you could buy an all-in-one word processor. Some people are perfectly happy with these. For around £300 you'll get something that edits and prints much like a PC, but is easier to use and easier to carry around too. Some word processors even include calculators and other handy features. Of course you won't be able to play *Quake* on it, but then again this may not bother you.

JPGs vs PCX

Q What's the difference between JPG files and PCX files? And which is better?

A JPG files (also known as JPEG – Joint Picture Experts Group) are compressed, and PCX files aren't. This means that big PCX images take up huge amounts of disk space. Look at the image below. As a PCX file it takes up over 3Mb. As a JPG, just over 400K.

The down side of compression is that it changes the image slightly. With the JPG format you can set the amount of compression. Full-on compression creates tiny files (17k in this case) but the image loses something in the translation, as you can see from the example below.

Here's a high quality photograph as a JPG file. It takes up just over 400K. Gorgeous colour and depth of field.

Here's the same file with maximum compression. Now it's around 17.5k – and completely unrecognisable.

CD REVIEW

Citizens

Control your own computer people in this friendly neighbourhood god game

Character Bar
Left click on a character to centre on him. Right click to lock onto that character.

Thought bubble
Indicates citizens current motivation.

Information Bar
Provides you with feedback on a cursor selected object.

Cosmic Balance Indicator
Shows you the current state of the cosmic balance.

Character Traits
Clicking blue will up the positive traits. Clicking in the red will up negative traits.

Brain Wave Scanner
Compares levels of character's current needs and traits.

Character Needs
Clicking in the blue area increases need. Red decreases.

Zapper and Object Grabber
Shock character or pick up an object.

Backwater Book
Click here for the BackWater book.

T ying in with our Alife theme, this demo brings puts you in control of a town full of *Citizens*. They'll live, make love and die of their own accord. Following a fatal car crash, you get a second chance in the after-life as guardian of the town Backwater – a town set up by Celestial Development Inc as a model to demonstrate the effect of good acts on modern society. Your job is to carry instructions while preserving the cosmic balance.

Anyway, you must use your powers to influence the way characters feel about Backwater and the other *Citizens*. The various influences are based loosely on the Seven Deadly Sins and the Seven Virtues. You must combine powers wisely to make the characters feel happy, sad, romantic, hungry, sociable, angry, etc.

For example, Joe and Anna are happy together. That is until you boost Joe's lust, and turn Anna into a fitness fanatic. If you also increase Joe's dishonesty he'll not have any qualms about indulging his newly lecherous personality.

The first screen in the tutorial would normally enable you to choose a difficulty level and enter your name. These options are not active so exit this screen (click the icon in the bottom right). You will now see an animation depicting winter changing to spring. After this you are shown the title of your current experiment and the characters involved are displayed for you to see. Moving the cursor over a character's head will display their name. Click in the bottom right of this screen and you will be presented with the open Backwater Book. The message page will be displayed and you're into the game.

Developer: Microprose
Publisher: Microprose
Contact: (01454) 894 298
Minimum system: 486/66, 8Mb RAM, double speed drive, SVGA.

You hold the populace between Heaven and Hell in Citizens.

It's difficult to find a motivation that will get Fred to shave.

To discover your current task, check the messages in the Backwater Book.

Quake and QuakePatch 0.92a

Yes. We couldn't bring you the public test version of *Quake*. Instead we bring you the shareware version. The full monty, a complete seven-level demo. And boy does this baby burn! We guarantee that the first time you shoot a zombie, only for him to roll over and back up again, you'll run to the other side of the room and gibber uncontrollably.

We've been playing this version on a Pentium 133, and we turned the video resolution up via the Console option (Vid_mode 10) for the full death-in-the-dark experience. Everything about the game oozes class – from the gasps as you emerge from the water to the time delay on the lobbed grenades – and the rest of the game just oozes. Make sure you check out our covermounted guide to all the secret levels and items. We reveal every cheat code, turning you into a god and giving you full access to the dread lightning gun.

Best of all though, we bring you the patch – to upgrade you to version 0.92. That means you'll suffer none of the quirks and glitches you'll find in some of the earlier copies floating about. Network support is in there too – unlike *Doom* shareware – check our the massive *Readme* file for details on this.

The finished game is still a couple of months off, but if this is anything to go by it's going to blow the hype out of the water. From a distance, it looks like *Doom*... but it plays like Armageddon.

Developer: ID Software
Publisher: ID Software
Contact: support@idsoftware.com
Minimum system: Pentium, 8Mb RAM, CD-ROM, 30Mb hard disk, VGA, MS-DOS 5 or Windows 95.

Olympic Games

Don't just watch the Olympics – get off your couch, power up this demo, then sit back down again and compete for yourself.

Euro 96 may be a fading penalty shot but the 1996 Olympic Games promise to be the biggest, the baddest and the most dollar-hungry yet. The games are heaven for armchair sports-fans, though for the man in the street, interaction is traditionally limited to betting his mates that he can do the four minute mile, half dying in the attempt and then whining that no-one breaks on the bend like Coe anymore.
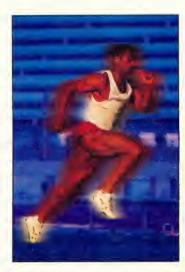
US Gold hopes to better meet our athletic urges with its official *Olympic Games* title. To get into the spirit, we've brought you two events on our CD: weightlifting and skeet shooting. Gameplay will be familiar to anyone who's ever played the old *Track & Field* coin-op or *Summer Games* on the C64, with button bashing very much the order of the day.

First up, skeet shooting. Before anyone calls the RSPCA, a skeet isn't a species of exotic arctic beastie, but rather the American term for clay pigeons. You negotiate a series of stations taking pot-shots at the skeets from a variety of angles. You're judged on accuracy, so steady those nerves. On the other hand, Weightlifting is about speed and technique. There are two bars on the right hand side of the screen – a blue one and a red one. Rhythmically bash button one and two like you've never heard of RSI and when the two bars match, hit the third button. You'll need to negotiate three stages to lock your arms in the air.

We wanted to bring you the demos in time for the Olympics proper – and they came straight from US Gold via motorbike to our disc – so as you'd expect they're a little rough around the edges. The complete game will include 15 events and feature commentary by Radio 5's Alan Green.
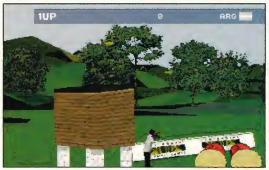
Developer: Silicon Dreams
Publisher: US Gold
Contact: 0121 625 3366
Minimum system: 486, 8Mb RAM, 3Mb hard disk space.

Key Controls

You can change these keys by editing the config.ini file created in the installation directory SDOLYMPC.

Player 1	Player 2
Q=Up	Cursor Up=Up
A=Down	Cursor Down=Down
Z=Left	Cursor Left=Left
X=Right	Cursor Right=Right
C=Button 1	Ins=Button 1
V=Button 2	Ctrl=Button 2
B= Button 3	Enter=Button 3
F1=Pause	F9=Pause
F2=Select	F10=Select

Deathmatch Quake. No-one's tougher than your mate.

Skeets look like frisbees, so there's a moral imperative to blow them out of the sky.

And little does the Argentine know that we've glued the barbell to the floor...

Gender Wars

The age old battle between men and women comes to bloody life in this strategic stomper from SCi. Our demo has a reduced set of operations and some pre-sets to get straight to the action without delay. It includes two missions – one for the male players and one for all you females.
Developer: SCi
Publisher: Funsoft
Contact: 0171 585 3308
Minimum System: 486, 8Mb RAM, 10Mb hard disk

Guys always get the bigger guns.

Pray for Death

Through time and space the finest warriors have gathered for the ultimate bust-up – and two of them even made it to our coverdisc. Angel fights demon, wizard fights warlord and you fight anybody who's hard enough. In this case, Painbringer the robot.
Developer: LightShock Software
Publisher: Virgin
Contact: 0171 368 2255
Minimum System: 486/66, 8Mb RAM, 15.5Mb hard disk space

It's beast against beast in PFD.

Virtua Fighter Remix

Our demo of Sega's revamped beat-'em-up puts kick-girl Pai Chan head-to-head with rugged Jacky Bryant. You have complete access to the full game's array of special moves.
Developer: SEGA
Publisher: Segasoft
Contact: 0171 373 3000
Minimum System: Pentium, 8Mb RAM, 11Mb hard disk, Windows 95

And here's a shot from the full game.

ShellShock

It's the future and anarchy reigns. You've joined a radical tank force dedicated to keeping the peace in New York state. In our demo version you take part in a hostage rescue mission, so you'll be careful where you point those guns now won't you?
Developer: Core Design
Publisher: Core Design
Contact: 01332 297797
Minimum System: 486, 8Mb RAM, 5.5Mb hard disk space

Outnumbered in Shellshock.

Silent Thunder

Our *Silent Thunder* demo simply gives you a sneak preview of one of the worlds from the game, but it should help you get a taste of the full product. Be careful of enemies on the ground, watch out for SAM sites and beware of the HIND that is heading your way…
Developer: Dynamix
Publisher: Sierra On-Line
Contact: (01734) 303322
Minimum System: 486DX/66, 8Mb RAM, Windows 95

One tank is about to die.

StarFighter 3000

Not only does the mag include a full review of this top new 3D shoot-'em-up from Telstar, we're also giving you lucky folks an opportunity to try the game for yourselves. Just shoot everything and be sure to collect those crystals.
Developer: Krisalis Software Ltd
Publisher: Telstar
Contact: (01932 222232)
Minimum System: 486, 8Mb RAM, 1Mb Hard Disk

Typical mayhem in Starfighter 3000.

Chaos Overlord

Play the bad guys in US Gold's latest gangland wargame. The future is a battleground between the Lords of Chaos. People, property and even pets are pawns in your quest for ultimate domination.
Developer: New World Computing
Publisher: US Gold
Contact: 0121 625 3366
Minimum System: 486, 8Mb RAM

The future shocks in Chaos Overlord.

Worms

Worms is a strategy game with a difference. You control your four worms and wage war with up to three other teams. You must try and use the weapons at your disposal in the best possible way – or at least to the most devastating effect. The demo features two landscapes and bags of weapons too.
Developer: Team 17
Publisher: Team17
Contact: (0)1924 267776
Minimum System: 486, 8Mb RAM, 3Mb hard disk

Worms: deadlier than a blackbird.

Bermuda Syndrome

You're a WWII pilot shot down over the Bermuda Triangle. Dangling from your parachute, you open your eyes and realise you've travelled back in time.To get moving in the demo, press [F1], grab the knife, and go to it.
Developer: Century Interactive
Publisher: BMG
Contact: 0171 973 0011
Minimum System: 486, 8Mb RAM

Kill the tribal dude, lose the girl.

Retro game of the month Number 3

Missile Command
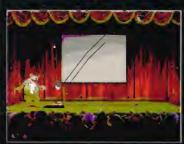
Microsoft Arcade features a coin-op perfect version of Missile Command.

Not many people know that the idea for *Missile Command* began with a magazine story about satellites that captured the attention of Atari's president, who passed the clipping to the developers. Even fewer know the game was nearly titled *Armageddon* carrying the message of the end of the world, a suggestion that was only rejected on the grounds that no-one would know what it meant. Many more people are aware of what an instant hit *Missile Command* became in the arcades back in 1980.

With *Missile Command* came an instant cult following – players spent hours saving the planet. Like *Centipede* it featured a trackball to control your target. Three fire buttons controlled the surface to air missiles which burst in the sky, erupting outwards to take out the incoming enemies – bombers, satellites, missiles and smart bombs all out to flatten civilisation. The shadow of nuclear war in the 80s reflected its chilling messages and predictions. Who can forget the sinking dread as that final cloud of doom descends as 'The End' filled the screen?

On a lighter note, *CD Review* features the Muppets Inside version of Missile Command (reviewed last month). Fozzie Bear… the planet Earth… they're all the same really!

Cheer up. Here's a soft toy to banish your fears of nuclear annihilation.

Scala MM100

Scala is the application that brings multimedia to the masses, so in a touching display of irony we're bringing Scala to your good self...

Multimedia isn't just another computer fad - it's becoming a way of life. By presenting information in an exciting way you instantly grab people's attention.

Add an interactive element, where the viewer participates in what's on the screen, and it instantly becomes more stimulating. Cue *Scala* – a program which lets you design your own multimedia work, tailored to your needs, using your own images and sounds if you like.

Our 100Mb demo is a mere sample of the full product, but it has everything you'll need to create great full-screen multimedia presentations. Images, clipart, animations, wave files, MIDIs, and several professional examples – including games – are yours to tinker with.

Before following this guide, it's assumed you have configured *Scala* to your liking from the Tools/Options button on the opening edit screen. In this demo script saving is disabled.

Scala walkthrough

1 Run the program from DOS or Windows. Every script begins with a background, so click the Add button, and from the Backgrnd sub-folder in the Scala directory, select green032. bmp image and click OK. To see miniature versions of images before loading, click on the Shuffler toggle, at the bottom of the screen, which looks like a fanned out deck of cards.

2 Once a background is loaded, *Scala* takes you to the text design screen. To colour text, background and shadow and even line art, click on a palette colour, then on the colour swatch in the appropriate button. Toggle a style by clicking on the button. The initial text here uses SfranklinN at 36 point, chosen via the Font button.

3 Click on screen and type in your text. Then select it by clicking and dragging a rectangle around it. You can select multiple items this way, and once selected, any attribute can be changed – colour, outline and so on. To add an effect to the text, click on the IN button, and choose a transition. We've used Vortex in the Alpha styles. Click on Preview for a taste of the effect. Click OK to return to text edit mode.

4 Press [F3] to access the Clips menu Click on the Clip bar (above Edit) to load in an image, and using the Shuffler view, select 1ovlrigh.bmp, which is a speech bubble in the Scala\Clips\Bubbles sub-folder. Drag the image into position. Right click the mouse button for a full-screen view. Click the IN icon, and from the list of styles, scroll down to find Fly On. This will animate the image over the screen.

5 Press [F2] to return to text edit, and add another line of text – this time in SfranklinN at 18 pt, which says Click me, and position it below or over the speech bubble. Click on the bubble clip to select it, and press [F6] to go to the button definition menu. Click on Button:Not a button, and select Normal

+ Select ; this allows you to edit actions to be taken after the button has been selected. Press [F12] to toggle between states, and stop on Select. In the Hotkey box, type in a letter of your choice which, when pressed, will activate the button just as a mouse click would.

The

Norton Antivirus

From the very earliest days of the PC, Peter Norton was there with his disk utilities. His programs were straightforward to use, and so comprehensive that eventually someone liked them so much they bought his company. But the Norton name lives on, recovering disks after headcrashes and protecting us from all kinds of software eating beasties.

We're proud this month to bring you a working demo of *Norton's Antivirus*. It may not give you the protection of the full product, but if all you've got between your hard disk and the nasties out there is our demo, you should be very grateful. It will scan executable files for viruses, remove boot infector viruses (viruses that infect boot MBR or boot records) and give you an overview of the full

Norton AntiVirus program. This version will not repair infected files and does not provide an automatic monitoring program. Check out the Readme file for full instructions.

The complete version of *Norton AntiVirus* is a comprehensive solution for preventing viruses from infecting your PC. It detects and removes over 5,300 known viruses and virus strains. In addition, it protects against unknown viruses by monitoring your system for irregular file activity. Should *Norton AntiVirus* detect an infection, it can repair most infected files quickly and easily before the virus damages your system. *Norton AntiVirus* is available for DOS, Windows 3.1 and Windows 95.

Developer: Symantec Corporation
Contact: 01628 592222
Minimum system: 386, 4Mb RAM, 6Mb hard disk

It may not look pretty, but then neither does your average viral adversary.

Works

Digita Organiser 1.0

Here's a real treat – an organiser with a calender, diary, addresses and task lists. Amazingly, you get all this for just 3Mb of hard disk space. This preview version does everything the full product does, but it keeps asking you to register on start-up. Registration is free, so why not?

Digita Organiser is a Personal Information Manager (PIM) – it helps you organise your life. Organiser is different in that it looks like a FiloFax, complete with pages and 'tabbed' sections. There are five sections: Calendar, Diary, Tasks, Address Book and Supple-ments. Organiser is extremely simple and intuitive to use yet has enough power to satisfy the most serious of users.

As a start, try adding you birthday to the diary. Select Diary Event from the Insert Menu and type the date of the birthday into Start. Then type your name into Description, click the Repeat tab and set Repeat Every to "1 Year".

Developer: Digita
Contact: 01395 270273
System Requirements: 486, 4Mb RAM, 3Mb hard disk space

Click on the Calender tab to display the calender section.

One Minute Guide

Like a set of crib notes, this guide from Hewlett Packard will turn you into an expert on the new medium of writable CDs in double-speed time. Recordable CD-ROMs have been available for a while now, but they are finally set to crash into the budget of the average home user. You can just imagine what you'll be able to accomplish with them. From backing up your music and game collections, to becoming a shareware publisher and even on to the dizzy heights of multimedia development, writable CD-ROMs will change the way you use your PC. Read this guide now and be there first.

Developer: Hewlett Packard
Contact: www.hp.com
Minimum system: 486, 4Mb RAM, double speed CD drive

From PC to CD, writable compact discs are coming our way.

Digital Studio

Digital Studio is a MIDI sequencer that allows you to record, edit and play MIDI data (but in the demo you can't save). As you might know, most modern music that doesn't feature a guitar nowadays is put together using MIDI data. In Digital Studio the basic unit of music is called the segment. A segment can be moved, repeated, split, combined with another segment or copied.

A segment can be edited in various ways. The Score View allows you to edit in standard music notation. The Piano Roll View displays the notes as rectangles on a grid. The Drum View is similar to the Piano Roll View except the notes are displayed as diamonds. To display a view highlight a segment in the Track View by clicking on it and then choose a view from the View Menu. Any changes made in these views will also be made to any other instances of the segment. There's more to Digital Studio then we could ever hope to cover here, so you're best bet is to install the software, and then get stuck into exhaustive help file.

Developer: AMC Software
Contact: 100766.1077@compuserve.com
Minimum System: 486, 4Mb RAM, 1.5Mb hard disk

Go from Jungle to the Dukes of Hazard, via the demo's rhapsody scores.

3D Studio Max Samples

The.AVI file within our demo gives you a sneak preview of what's possible with Biped and Physique – the two Plug-In Components of 3D Studio Max that comprise the Character Studio. CSTUDIO.AVI demonstrates how Character Studio brings three aliens to life. The skeletons of the three dancing aliens were choreographed using Biped. The alien meshes (from Viewpoint Data Labs) were linked to the Biped armature with Physique, which then controlled how the surrounding skin moved and flexed with the Biped skeleton. Motions were easily cut, pasted, and adjusted between the aliens to co-ordinate their dance. Try it.

Developer: Kinetics
Contact: www.ktx.com
System Requirements: 386, 4Mb Ram

Sculley, take a look at this. Dancing aliens rendered in 3D Studio Max.

6 Click on the Variable button. Here's where you control your script. In the Set Variable requester, type in PCR= " your text message". OK that, and when the definition requester pops up choose Text. Right click the mouse to clear edit bars. Where you want your message to be displayed, type this IPCR. No spaces, no quotes, no full stop. When the script runs, your text will be printed down there.

7 The demo is save disabled so you can't save your animation. Still, you can view a single high resolution screen. Make sure you're in the camera view window, go to the frame you want to see and click the expand button at the top of the window. Select the magnifying glass, then drag an outline around the bat and ball to zoom in. Release the button and click Final Render to Screen from the Render menu.

8 Back to the main edit screen, click on the Timing bar of screen 1, enter 9 as the pause in seconds delay by scrolling through the Wait for... button. Click on the Wipe bar of page 1 and select a screen transition as you did for text. If you have a Soundblaster compatible card, add a MIDI file here too by clicking on the Sound button and selecting a file? Now you can Run the presentation and start your next one.

Cubase Score 3.0

If you want to make music with your PC, there's arguably no better way than with Cubase. Steinberg, the developer, calls it the complete integrated music recording and publishing software. We call it one fab sequencer with more features than a multiplex cinema.

Since Steinberg in Germany first created *Cubase* in the 80s, the software has become almost synonymous with music-making and computers. *Cubase* – principally a sequencer, or 'tape recorder' for storing information about musical notes and directions – started life on the humble little Atari ST, quickly gained a reputation for its power potential and ease of use, and became the de facto means of recording and arranging MIDI-based music for many musicians. Now in 1996, several forms of *Cubase* exist across ST, Mac and PC platforms.

What makes *Cubase* so appealing? Nominally it's the superb Arrange window which shows clearly the structure of a song and which instruments are playing and when. Behind this juicy front end is a wealth of functions and features. There are several ways of correcting timing errors (quantizing) or, looking at it another way, adding grooves to your work. Note information can be edited in several different ways; professional DTP sheet music can be written and printed; and now, with *Cubase Score 3.0*, up to eight tracks of digital audio can be played alongside the MIDI data. Powerful, expressive and creative stuff? It certainly is.

So here's a demo of this ripper package complete, apart from the save option. Below is an eight step guide to help you take those first few steps into music, MIDI, muting and Match Quantize. You don't need any acquired knowledge of music notation, you don't even need an external MIDI keyboard. Just a little imagination... And maybe our walk-through to get you started.

The Toolbox

Access this bar from the Arrange window.

Arrow: for selecting things.

Eraser: delete Parts with this tool.

Match Quantize: match the rhythm of one part to that of a second.

Scissors: split one Part into two or more.

Magnifying Glass: scrub along a Part to hear the notes written there

Pencil tool: create and change the shape of Parts.

Mute: turn off Parts temporarily.

Glue Tube: stick 'scissored' Parts back together with this.

Share

Powerdesk 1.0

PowerDesk is the ultimate in desktop accessories. It's an enhancement utility for Windows 95.

The PowerDesk package contains two incredible utilities that will immediately make you more productive in Windows 95: PowerDesk Toolbar and ExplorerPlus. In fact it's so good it's being nominated for the industry award of Best Shareware Title.

Once installed the Toolbar appears on the top of the screen and lets you get straight to the Windows features you want without any fuss. ExplorerPlus is an enhanced file management and file navigation utility. ExplorerPlus extends the capabilities of the Windows 95 Explorer, and yet it still works in the same way, so you don't have to learn a new user interface.

Publisher: MicroHelp
Contact: 1-800-922-3383
Minimum System: 486, 8Mb RAM, 1.5Mb hard disk, Windows 95.

Teach Windows 95 who's boss with PowerDesk 1.0.

WordExpress 2.0

If you don't have a word processor, look no further. *WordExpress 2.0* offers the best value word processor you'll get for your money. It only costs £39 and offers all the features you'd expect from a serious piece of software. We're bringing you the very latest version of this award winning application.

WordExpress 2.0 is perfect for executives, students, home offices, or anyone looking to write without having to memorise confusing keystrokes. It installs in the smallest footprint of any Windows word processor, making it ideal for laptop PCs. Top of the line features include WYSIWYG editing, fonts, columns, pictures, tables, spell checker and more. *WordExpress* is great for small desktop publishing tasks too.

Developer: Micro Vision
Publisher: The Thompson Partnership
Contact: 01889 564 601
Minimum System: 486, 4Mb RAM, 3.5Mb hard disk space, Windows 3.1 or 95

The time-limited WordExpress gives you handy tips while you work.

---

1 Install the software through the *CD Review* menu and once you're in, click on the Track 1 box in the Tracks column and name your instrument. Piano isn't exactly daring, but it's good enough for now. Move to the Part Info column on the left, and select Grand Piano. In the Arrange Window, double click between the pointers, and a Part appears.

2 Double-click on that Part, and the Edit window appears. This is where the creativity begins. Using this window you can enter notes without the need for music theory or an external MIDI keyboard. Make the Toolbar appear with the right mouse button, and select the pencil tool. If you look to your left you can see what each of the other tools do as well.

3 Changing the Snap and Quantize values to 8 means you'll be writing in note units of an eighth (quavers for the musos). Now draw some notes onto the score graph, scrolling up and down for the full range.. Try and stick to the white ones (notes are illuminated on the left hand side as you select them) for the most musical, if not a little primitive, results.

ware
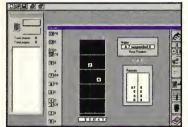
Guitar Teacher 3.0

Guitar Teacher may not offer to turn you into the next Jimmy Page, but it's a great system for displaying, studying and printing guitar-chord diagrams.

The program features seven chord formulas: major, major 7, minor, minor 7, 7, suspended 4, 7 suspended 4th and six alternatives for each chord. It has 504 chord diagrams, Formula and voicing displayed, right- or left-handed fingering, save and print chord charts, includes a guitar tuner and instruction on tuning and chord structure.

Register for the full version and you get *Guitar Pro* which offers features to meet the needs of the serious guitarist. Nineteen chord formulas are provided with up to 15 alternatives for each chord. This adds up to a maximum database size of 3,420 chord diagrams.

Developer: Celista Software
Publisher: Celista Software
Contact: Celista@netshop.net
Minimum System: 486, 4Mb RAM, 2.5Mb hard disk, Windows 95

Observe the finger positionings on the fretboard to learn your chords. Rock.

StuffIt Expander 1.0

Here's a little gem. *StuffIt Expander* is the simplest way of unzipping any kind of compressed file for Windows 3.1 or 95 that we've yet come across, and it's absolutely free. Just install it to your hard disk and then click on the new StuffIt icon. A box will appear on your desktop. Whenever you want to unzip something just drag it into the box. It's as simple and wonderful as that!

StuffIt Expander expands seven of the most popular compressed and encoded formats: StuffIt (.sit), Zip (.zip), Arj (.arj), Arc (.arc), gzip (.gz, .z), uuencode (.uu, .uue), and BinHex (.hqx). It also supports StuffIt, Zip, and Arj self-extracting archives (.exe, .sea), and Macintosh files in MacBinary (.bin) format. That's probably more formats than you even knew existed.

Developer: Aladdin Systems
Publisher: Aladdin Systems
Contact: US (408) 761 6200
Minimum System: 486, 4Mb RAM, 1Mb hard disk space

Decompress StuffIt compressed Mac files on your PC.

Poster 3.0

Poster 3.0 is a popular Windows program for making big posters, signs, and banners. Posters can be up to nine feet by nine feet. *Poster* combines the best features of word-processing, graphics, and DTP software that are especially tuned for big posters and banners. This includes complete flexibility in the placement of graphics, a full set of drawing tools and over 100 special effects (like 3D, rotate, and arch) for text.

All text and graphics are enlarged and tiled over multiple pages. *Poster* supports all True-Type and ATM fonts, and imports graphics like BMP and WMF files, as well as from the Clipboard and OLE applications. The program supports full colour, and most Windows-compatible printers. But have a few sheets of paper on hand, eh?

Developer: Bob Bedoll
Publisher: Poster Software
Contact: (206) 848-0467 - PosterSW@aol.com
Minimum System: 486, 4Mb RAM, 2.5Mb hard disk space

Here's my fi Poster!

Print huge posters bigger than your screen with Poster 3.0 by Bob Bedoll.

A-Life collection

To accompany our ALife feature we've got a superb selection of programs for you to play God with.

First off there's the great *Primordial Life* screen saver which transforms your desktop into a breeding ground for simple life forms. You can elect to feed or kill different organisms with a few mouse clicks. Over time you'll breed an impressive range of life forms.

Boids reproduces the patterns of birds in flight. All the birds of the same colour will stay within a certain distance of one another. You can alter this distance for interesting effects. *Trophy Bass* at first looks like just a fishing game, it contains a simulated lake, so we've included it here. *WinLife* is *Game of Life*. You create organisms from just a few cells to see if they can to survive. Load up the example files to see what's possible. FORM is superb 3D rendition of a similar theme, again there's lots of example files to load. See page 65.
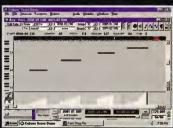
I toit I toi a boid! With Boid you can fiddle with natural flock movement.

4 Close the window and create another part. Let's go for a groovy Slow Bass this time. Heavy! Select the Scissors from the Tool Bar, and make a cut after one bar of the Piano Part. Holding the [Alt] key, drag that bar down on to the Bass Track. Now in Edit, grab the Eraser and thin out the line to just a few notes. Now we've got two instruments pumping a beat.

5 Find Legato in the Functions menu. This smooths the gaps between notes. Rubberband the notes and drag them down an octave (to C3). Close the window and hit [Ctrl] + [K] to bring up the Repeat function. We'll take three copies, please. Glue them together (Glue Tool), then back to Edit for this picture. Better change the name of the Part to Slow Bass, too.

6 Another Track, another Part. Let's try some arthouse pseudo-random percussion rolls. With a drum sound selected, use the Brush Tool to drop lines of notes (change the Snap and Quantize to something high). Bring up the Velocity levels graph (hit the Control button, bottom left hand corner) and draw in dynamic changes with the Pencil.

7 And so you continue: create new Tracks, pull Parts around, experiment and see what happens. There's lots of power we haven't even touched on: Quantising notes to weird grooves, Reversing phrases, adding other Controller messages like modulation and pitchbend, and all without the aid of an external keyboard. Piano lessons? Pah! We're rockin'.

MULTIMEDIA

Truckology

Our fully interactive demo features the VR-quarry from the full version, where you can explore the Kamatsu PC1600 Hydraulic Excavator.

Once in the quarry you can use the direction icons from the control bar to move about and the + and - icons to zoom in and out. When you've finished enjoying the view click on the excavator. There are various hotspots to find, but if you click on Help all the active hotspots will be outlined, so you won't miss anything.

Developer: Maris
Publisher: Maxis
Contact: 0181 943 439
Minimum System: 486, 8Mb RAM, double speed CD drive, Windows

Play around in the Kamatsu PC1600 Hydraulic Excavator.

Truckology has everything a young truck driver needs to know.

Connections

Based on the hit 70s TV series of the same name featuring James Burke, this adventure has some incredible mind bending puzzles to solve. The game jumps between puzzles in the same way that the TV series ran rough-shod through the pages of history, linking ideas and inventions which have shaped our time.

You'll need a run-time copy of QuickTime for Windows installed before you run the demo. It's available in the Essentials section.

Developer: Discovery Channel
Publisher: Astrion
Contact: 0181 202 0011
Minimum System: 486, 8Mb RAM, double speed CD drive, Windows

Egg head James Burke is your host for this mind bending adventure.

Travel the world and walk through the pages of history with Connections.

SFX-CD

Britain's most popular science fiction magazine has now gone interactive with this quarterly CD-ROM. Music, movie footage, photographs, and atmospheric sound and graphics take the CD-ROM magazine a step closer towards becoming a workable concept. Hurrah.

The premiere issue features Doctor Who (where he's been and where he's going), *Twelve Monkeys* (a full review), *Hackers* (the new sci-fi movie), and exclusively previews extracts from the works of SF writers Patrick Tilley and John Barnes. There's also (surprise, surprise) a *Star Trek* feature on the 30th anniversary events, plus a specially created *Star Trek* archive. You can find out all about it with the great preview on *CD Review*.

Developer: PNE
Publisher: PNE
Contact: 0171 331 3920
Minimum System: 486, 4Mb RAM

Follow the ice corridor into the mysterious world of SFX-CD.

Discover Astronomy

The universe is a big place, and many discs have already tried to help you explore it, in particular the famous *RedShift*. Unfortunately these discs often assume a lot of background knowledge, leaving budding astronomers fumbling for their calculators, instead of soaring to new heights of discovery.

Aware of this problem Maris Multimedia has produced *Discover Astonomy*, which aims to deliver you the universe without all the calculations and complexities.

Our fully interactive demo features a huge movie explaining the Big Bang theory, and also lets you explore the Andromeda galaxy, the only spiral galaxy visible to the naked eye from Earth.

Developer: Maris
Publisher: Maxis
Contact: 0181 943 439
Minimum System: 486, 4Mb RAM

Take your first steps to being a fully fledged astronomer.

Perfect Plants

Everything you need to know about plants is in the full version, but our huge demo has lots to offer too. For example, in Garden Tours go on a serene stroll around an English cottage garden. In the plant care section you'll learn how to propagate your daylilies and prune your Abutilon and Hybrid tea roses, plus much more. Install Quicktime before running this demo.

Developer: Macmillan
Publisher: Macmillan
Contact: 0345 697 008
Minimum System: 486, 4Mb RAM

This hardy perennial is one many plants that can't wait to meet you.

Join Roger Phillips for a leisurely stroll around an English garden.

Origins of Mankind

Most people assume that Darwin got it right with his theory of evolution. Whichever theory you subscribe to, our origins remain a fascinating subject. This disc documents our evolutionary changes via a comprehensive time line. In the full version you can also accept missions to go on archaeological digs. There's also some cool morphological transformations to view and paleontological discoveries to be made.

Our exclusive demo lets you find out all about Neanderthal man, our distant, low browed cousin who mysteriously disappeared around 30,000 BC. You can visit a Neanderthal camp site, find out about the first Neanderthal discovery in Germany and compare a Neanderthal and Homo Sapien head with full 360 degree rotation.

Developer: Maris
Publisher: Maxis
Contact: 0181 943 439
Minimum System: 486, 4Mb RAM

A puffy face, large nose, non-existent chin, plays for the local RFC...

Raw materials

Want to get your hands on some great free graphics? Every month, in conjunction with DVS UK (tel. 01908 371999), we're giving away a selection of top art resources for you to keep. We've cleared the royalties so you can use them wherever and as often as you want.

This month's selection includes 12 PhotoCD images, 12 fonts and 12 clip art pictures. You'll find a selection in the PSC directory which includes three directories, PHOTOS, CLIPART and FONTS. The Bluebird Corporation distributes DVS titles directly, and has stacks of clip art, fonts, images and software. They're in good retailers priced at £14.99 or you can contact Bluebird directly on 01908 27707 for a free catalogue of their full range.

Fonts

AAABBBCCC𝔇𝔇
EEEfffGGGHH

Photos (filenames as per captions)

Animal2   Backgamn

Bathroom   Bublebth

Change   Cross

Clip Art

ABS-02   Back02

Cane   Dance02

Eastsocr   Face05

Globe   Hand01

Island   Jamaican

The menus

Windows 95 users.
The coverdisc is simple to run in Windows 95. Pop the CD in the drive, wait a few seconds and the Windows 95 menu will autorun. However, this feature is not supported on all machines so if nothing happens click on Start, then select Run. Use the Browse option to locate the file REVIEW95.EXE, and you're into the action.

Windows 3.1 Menu.
First click on File, then Run, then use the browse option to select the file REVIEW.EXE. Double click the file name to start the menu.

Our Windows menus are split into five sections, the contents of which are described in more detail in these disc pages. To get to a section click on its icon from the main screen, and then use the arrow keys to move backwards and forwards through the demos in the section.

DOS Menu
Even in these enlightened times many games require DOS to run, so you'll find most of this month's in our DOS menu. To fire things up, just type PCR or GO at the DOS prompt of your CD-ROM drive. You'll then be asked how many colours you want to run the menu in. Most systems these days can support 256 colours, so make this your first choice.

The program remembers which choice you made and goes straight to the relevant menu next time you run our it, so you'll only be asked once. If you want to change your mind, and run the menu with a different number of colours, then type TRY AGAIN at your CD drive letter (usually D:). Once the DOS menu is up and running use the arrow icons to scroll through our demo selection.

RUNNING PROGRAMS MANUALLY

If you have memory constraints, or you find there are palette problems and the display colours look wrong when running demos from our menus, then you may need to run the demos manually. Here is a list of the executable files you need to run (assuming your CD-ROM drive is D:\)

Program Directory and File name

Program	Directory and File name
Bermuda Syndrome	D:\Bermuda\Install.exe
Boids	D:\Sharew\Boids.exe
Citizens	D:\Citizens\Install.bat
Connections	D:\Connectd\Connect.exe
Cubase Score 3.0	D:\Cubase\Install.exe
Digita Organiser 1.0	D:\Organise\Setup.exe
Digital Studio	D:\Studio\Install.exe
Discover Astronomy	D:\Maris\Dademo.exe
FORM	D:\Sharew\Form06r\Wform.exe
Fozzie Command	D:\Fozzie\Project1.exe
Gender Wars	D:\Gender\Install.exe
Guitar Tutor 3.0	D:\Sharew\Guitar\Gtsetup.exe
Norton Antivirus	D:\Norton\Navscan.exe
Olympic Games	D:\Pcoly\Demo.exe
One-Minute Guide	D:\HPCDR\Guide95\guide95.exe
Origins of Mankind	D:\Origins\Demo.exe
Perfect Plants	D:\Plants.exe
Poster 3.0	D:\Sharew\Poster30\Poster.exe
PowerDesk 1.1	D:\Sharew\Powerd\Setup.exe
Pray for Death	D:\Pray\Isntall.bat
Primordial Life 3.0	D:\Sharew\Prim\Install.exe
Quake	D:\Games\Quake\Install.bat
Quake v0.92 Patch	D:\Games\Quake92p\Install.bat
Scala Show and Tell	D:\Scala\mm.exe
SFX-CD	D:\Sfxcd\Sfxcover.exe
Shellshock	D:\Games\Shells\Install.bat
Silent Thunder	D:\Games\A10\Stdemo.exe
Smart Games Challenge 1	D:\Games\Chall1\Sgc1demo.exe
Stuffit	D:\Sharew\Stuffit\Sitex10.exe
Trophy Bass	D:\Bass\Setup.exe
Truckology	D:\Truk\Trucdemo.exe
Virtua Fighter Remix	D:\Ssp.exe
WinLife	D:\Winlife\Winlfe.exe
WordExpress 2.0	D:\Sharew\we95\Setup.exe
Worms	D:\Games\Worms\installc.bat

Windows 95

Some DOS games have problems running in Windows 95. We've included an option to run the DOS games that we know work in Windows 95 from our menu, but we can't guarantee they'll work on all systems. If you're having trouble running a DOS game in Windows 95, try running it from our DOS Menu instead.

First select Restart in DOS Mode from the Shut Down Menu. When DOS has started type D:\PCR, where D is the letter of your CD drive.

Install options
Make sure you select the default installation path for all demos, otherwise when you click the Run button nothing will happen.

Support
If you need help getting a demo to work, call our support line on 01225 442244 and ask for Trevor Witt. Or email him on support@futurenet.co.uk

Disclaimer
CD Review is thoroughly checked for all known viruses and independently certified before duplication. While every care is taken in selection, testing and installation of CD Review, Future Publishing cannot accept responsibility for loss or damage occurring during its use. You are advised to have recent, verified back-ups of all important files before installing new software.

Memory
If you have trouble running a demo it may be because you need

more conventional memory. Conventional memory is the memory below 640K. Even if you have a PC with 8Mb of RAM, that doesn't mean you'll have the conventional memory to run a CD Review demo. To find out how much free conventional memory you have type MEM[Enter] at the DOS prompt. If the figure beside the line 'largest executable program size' is less than about 550k then your system isn't set-up right.

You can free up more conventional memory by loading the EMM386 driver which allows you to move device drivers into upper memory, thus freeing up more space. To add the EMM386 driver you need to edit your AUTOEXEC.BAT and CONFIG.SYS files. It is always a good idea to make copies of them before editing them. At the C:\> prompt type:
COPY C:\CONFIG.SYS
CONFIG.BAK [ENTER]
COPY C:\AUTOEXEC.BAT
AUTOEXEC.BAK [ENTER]
If you have any problems later on you can return to these by typing:
COPY C:\CONFIG.BAK
CONFIG.SYS [ENTER]
COPY C:\AUTOEXEC.BAK AUTOEX-EC.BAT [ENTER]
To edit your system files type EDIT followed by the name of the file. These lines should be in your CONFIG.SYS file:
DEVICE=C:\DOS\HIMEM.SYS
DEVICE=C:\DOS\EMM386.EXE NOEMS
DOS=HIGH, UMB
Any lines starting with DEVICE should be changed to:
DEVICEHIGH
In the AUTOEXEC.BAT any device

should now be sent to high memory.
For example:
C:\MOUSE\MOUSE
should read:
LH C:\MOUSE\MOUSE
These changes will free more conventional memory Another way to free up more conventional memory is to remove any Terminate and Stay Resident (TSR) programs from the system files. The following lines are not essential for using CD Review. Kill them by putting REM at the start of the line.
In CONFIG.SYS:
Any line containing SMARTDRV.SYS, DISPLAY.SYS or COUNTRY.SYS
In AUTOEXEC.BAT
Any line containing SMARTDRV, DOSKEY, or which loads a virus checker.

When you've made the changes, reboot. To restore your system, simply reverse any changes, or replace the new CONFIG.SYS and AUTOEXEC.BAT files with your back-ups.

EMS Memory
Some PC games require EMS memory rather than XMS memory. To configure your PC for EMS memory change the line in your CONFIG.SYS reading:
DEVICE=C:\DOS\EMM386. EXE NOEMS
to:
DEVICE=C:\DOS\EMM386. EXE RAM
Reboot your machine for this change to take effect. You will have to reverse the above change for other programs to work.

NEXT MONTH

in PC REVIEW

Fun with photos!

FULL PRODUCT We give away the complete version of *PhotoPlus*. This fully featured image editing package, normally sold for £34, comes complete with a 100-page manual.

Plus:

We let you in on the secrets of image manipulation and show you what the experts get away with!

- Getting images into your PC
- Fooling around with photos
- Colour printing techniques

On sale Thursday 15 August
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Control Freak
Tale control of your PC with our roundup of ten new controllers – all selling for less than £50.

Your next processor
Thinking of getting a new CPU? Don't spend out on anything until you've read our definitive buyers guide.

The ultimate sports double-bill
Exclusive playable demos of new golf game *Links LS* and knockabout *Davis Cup Complete Tennis*.

Meet the graphics godfather
We interview Kai Krause, the man behind the world's best photo software and review his latest: *Power Goo*.

Get your revenge
We show you how to send phony emails via the Net, with a top practical joke to get you started.

not all
things white
are pure

THE WHITE LABEL

NASCAR Racing

PAPYRUS

PC CD-ROM
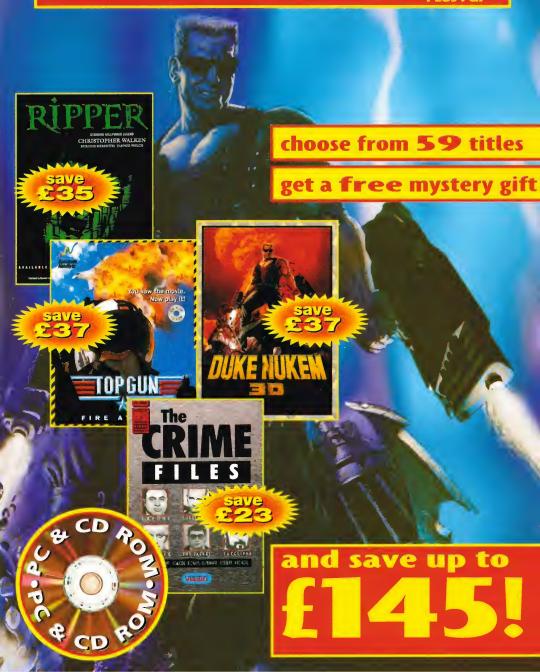
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PAPYRUS